Family MYCTOPHIDAE

Body oblong or tapering behind, more or less compressed. Caudal peduncle deep or slender. Head usually short, compressed. Snout usually short, blunt, obtuse. Eye large, often increases in size with age. Mouth large, jaws usually equal or lower on slightly protruding, Premaxillaries mostly long. Maxillary well developed, slender or expanded terminally. Teeth villiform, in bands in jaws, on palatines, pterygoids and tongue. Gill rakers lanceolate, seldom rudimentary. Gill membranes separate, free. Pseudobranchiae well developed. Branchiostegals 8 to 10. Air bladder small. Intestine short. Body covered with cycloid scales, sometimes spinescent. Caudal base scaly, sometimes most of fins scaly. Lateral line usually developed, complete, sometimes scales in its course enlarged. Luminous spots, or photophores, usually regularly or definitely arranged along lower sides of head and body as 2 or 3 supraanals, 1 or 2 mediolaterals and precuadals always 2 to 4. Dorsal fin entirely before anal, overlapping little or none. Adipose fin developed. Caudal forked or deeply emarginate. Pectoral well developed. Ventral with 8 rays, below or slightly advanced from dorsal origin.

Small fishes of the open seas, usually found far from shore. They usually live in deep water, moving to the surface at night. Some species are solitary, others social, as they have been found in large schools or several hundred individuals at one time. Their food is largely crustacea, though they also devour smaller or larval fishes. Lernean copepods are also found on some species, though rather infrequently.

Sexual dimorphism occurs with respect to the supracaudal and infracaudal luminous bodies or plates, the former with respect to the male and the latter the female. Exceptions to this condition have been reported, as sometimes they are absent and again both supracaudal and infracaudal plates may be developed in one individual.

Many writers use a system of abbreviations or the combination of certain letters to designate the various photophores. This is a method often confusing and however laudible in condensing the lette press is surely apinful in application. For this reason I have written out all the designations for the photophores (see accompanying figure).

The following species described by Günther in 1879 were all later referred by him (1887) to the Xenoberyces:

Scopelus mizolepis.

Scopelus crassiceps.

Scopelus macrostoma.

Scopelus microps.

The following nominal forms are so imperfectly noticed that their proper generic allocation is not possible:

Scopelus tenuicauda Steindachner 1867.

Scopelus langerhansi Johnson, Proc. Zool. Soc. London, 1890, p. 454. Madeira.

Scopelus bericoides Borodin

Scopelus bericoides BORODIN, Proc. New England Zool. Club, vol. 10, Jan. 22, 1929, p. 110. N. 41° 30' W. 45° 57', 800 fathoms.

Depth 6 1/2; head 5 1/3, cavernous.

Snout 5 2/5 in head, blunt; eye 3 3/8; mouth cleft short not reaching eye; teeth feeble.

Scales 50 (traces) in lateral line, 7 or 8 transversely.

Mandible with 9 luminous spots; no luminous spots on body.

D. 10; A. 22; pectoral 10; ventral 9.

Length 142 mm. (Borodin.)

North Atlantic.

Analysis of Genera

a^1. Luminous organs present, usually as photophores.

b^1. Myctophinae. Photophores in distinct and arrangement.

c^1. Supracaudal and infracaudal luminous bodies, when present as series of defines scales.

d^1. Precaudal photophores 2. Myctophum.

d^2. Precaudal photophores always more than 2.

e^1. Antorbital luminous organs not conspicuously enlarged; supracaudal and infracaudal luminous organs present. Lampanyctus.

e^2. Antorbital luminous organ conspicuously enlarged; supracaudal and infracaudal luminous organs rarely present. Diaphus.

c^2. Large undivided median supracaudal and infracaudal luminous plate in place of several normal scales. Lampadena.

b^2. Neoscopelinae. Single photophore beneath each scale over entire body or on lower surfaces of body, not arranged in distinct and definite series.

f^1. Photophores only on lower or ventral portion of body.

Neoscopelus.

f^2. Single photophore beneath each scale of entire body.

Scopelopsis.

a^2. Scopelenginae. No luminous organs or photophores present.

Scopelengys.

Genus Myctophum Rafinesque

Myctophum RAFINESQUE, Ind. Itt. Sicil., 1810, p. 56.

Type Myctophum punctatum RAFINESQUE, monotypic.

Myctophus COCCO, Giorn. Sci. Lett. Sicilia, vol. 24, No. 77, 1829, p. 44. Type Myctophum punctatus RAFINESQUE.

Nychtophus COCCO, Nuovi Ann. Sci. Nat. Bologna, vol. 2, 1838, p. 180. Type Myctophum punctatum RAFINESQUE,

Scopelus CUVIER, Regna Animal, vol. 2, 1817, p. 56.

Type Gasteropelecus humboldti RISSO, designated by GOODE and BEAN, Oceanic Ichth., 1895, p. 70.

Alysia (not) LOWE, Proc. Zool. Soc. London, 1839, p. 87. Type Alysia loricata LOWE, monotypic.

Dasyscopelus GUNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 405. Type Myctophum asperum RICHARDSON, designated by GOODE and BEAN, Oceanic Ichth., 1895, p. 91.

Tarletonbeania EIGENMANN and EIGENMANN, Proc. Californ-
ia Acad. Sci., vol. 4, 1890, p. 7. Type Tarleton-
beania tenus EIGENMANN and EIGENMANN, monotypic.

Rhinoscopelus LÜTKEN, Vidensk. Selsk. Skrift. Nat.
Kjöbenhavn, ser. 6, vol. 7, 1892, p. 236. Type
Scopellus cocco COCCO.

Benthosema GOODE and BEAN, Oceanic Ichth., 1895, p. 76.
Type Salmo mulleri GMELIN, orthotypic.

Electrona GOODE and BEAN, Oceanic Ichth., 1895, p. 91.
Type Scopelus rissoi COCCO, orthotypic.

Centrobranchus FOWLER, Proc. Acad. Nat. Sci. Philadelphia,
1903, p. 754. Type Centrobranchus choercephalus
FOWLER, monotypic.

Loweina FOWLER, Amer. Mus. Novitates, No. 162, March 31,
1925, p. 2. Type Scopelus (Rhinoscopelus) rarus
LÜTKEN, orthotypic.

Antorbital luminous organs not especially enlarged. Orbital photophores small. Pectorals, ventrals and anal photophores all nearly at same level, rarely penultimate pectoral or second ventral elevated from plane of series. Anals in 1 or 2 groups. Precaudals always 2, usually well separated from last posteroanals, rarely continuous. Photophores without black dividing septum. No luminous scales. Luminous supracaudal and infracaudal plates, seldom both present in one individual. Dorsal fin shorter than anal fin.

Analysis of species

a^1. Four photophores well above lateral line, 1 at front end of dorsal fin base, 1 at hind end of same (uppermost supraanal), 1 at base of adipose fin (superior posterolateral) and 1 at caudal base (last precaudal). *valdiviae.*

a^2. No photophores above lateral line.

b^1. Posterolateral absent; anteroanal in 1 single continuous group; only 2 precaudals, both on same level; suprapectoral at or below pectoral fin base.

c^1. Lens of eyes excentric, dorsal; eyes more or less approach telescopic; scales cycloid.

d^1. First 2 supraanals and 2 precaudals separated from each other by conspicuously wide interspaces; head 4; anals 18. *parallelum.*

d^2. First 2 supraanals and 2 precaudals normally spaces; head 3 1/3; anals 15 or 16. *arcticum.*

c^2. Eyes normal.

e^1. Head 2 1/2 to 3; eyes 2 or less; scales cycloid. risso.

e^2. Head 3 to 3 2/5; eye 2 3/5 to 3; anals at same level. tenisoni.

e^3. Head over 3 1/2; eye 2 1/2 or more.

f^1. Two front anteroanals elevated; scales cycloid. anderssoni.

f^2. Front anteroanals not elevated.

g^1. Anal origin below middle of dorsal; scales cycloid. antarcticum.

g^2. Anal origin below hind end of dorsal base; scales ctenoid. subasperum.

b^2. One posterolateral photophore; anals in 2 separate groups.

g^3. Two ventrals (rarely 4); suprapectorals lower than pectoral fin origin; 3 supraanals (rarely 2); lateral line present; first subpectoral before second subpectoral; anals 6 to 8 - 5 to 7; intervals between second, third and fourth pectoral shorter than those between first and second and fourth and fifth pectorals. interruptum.

g[4]. Six ventrals; suprapectoral above pectoral base; lateral line obsolete; scales ctenoid; anals 10 or 11 + 14. crenulare.

g[5]. Five ventrals; scales ctenoid; supra-anals in straight series. cuvieri.

g[6]. Four ventrals.

h[1]. Only 2 supraanals; suprapectoral lower than pectoral fin origin; second ventral not elevated; first subpectoral behind second pectoral; interval between third and fourth pectorals shorter than between second and third and between fourth and fifth pectorals; anals 6 or 7 + 5 or 6. rarum.

h[2]. Three supraanals; suprapectoral always above pectoral base.

i[1]. Second ventral spot more or less elevated.

j[1]. Suborbital organ present. imitator.

j[2]. No suborbital organs.

k[1]. First supraanal in line with supraventral and second supraanal; supraanals broadly angulate.

l[1]. Supraventral half as far from lateral line as from ventral bases; anals 5 or 6 + 3 to 5. pterotum.

l[2]. Supraventral midway between lateral line and ventral bases or nearer latter; anals 5 to 7 + 5 to 8. glacialis.

k[2]. First supraanal lower than second, much lower than supraventral, far below line between these 2 spots.

m[1]. Second precaudal well below lateral line, scarcely elevated; anals 5 to 7 + 2 to 4. laternatum.

m[2]. Second precaudal in lateral line; anals 5 to 7 + 4 to 6. fibulatum.

i^{2}. Second ventral spot in line with rest of series.

n^{1}. Snout prominent, more or less pointed; tail very slender; anal fin much longer than dorsal; hind anals more numerous than anterior (4 to 8 + 7 to 14).

o^{1}. Gill rakers long; supra-anals broadly angulate. cocco.

o^{2}. Gill rakers very short; supraanals very broad-ly angulate or in nearly straight line.

p^{1}. Eye 3 1/2 to 3 2/3. nigro-ocellatum.

n^{2}. Snout not prominent; tail deeper.

q^{1}. Scales spinous (ctenoid).

r^1. Anals 6 to 8 + 2 to 4 (9 to 11); eye 2 4/5; gill rakers 4 + 15; depth 3 4/5; supraanals nearly straight; depth 3 1/2.

orientalis.

r^2. Anals 6 to 8 + 3 to 5 (10 to 12); eye less 2 3/5; head 3 3/5; depth 4 1/4; gill rakers? + 17; supraanals straight or but slightly angulate.

pristilepis.

r^3. Anals 6 to 8 + 5 to 7 (11 to 15); head 3 2/3 to 4 1/3; gill rakers 5 + 10 or 11; supraanals distinctly angulate; depth 4 1/3.

asperum.

r^4. Anals 6 to 8 + 5 to 8 (12 to 15); eye 2 2/5 to 3 1/5; depth 4 to 4 1/3; head 3 1/2 to 4; gill rakers 7 + 16; supraanals straight.

spinosum.

q^2. Scales smooth (cycloid).

s^1. Supraanals sharply angulate; first on same level as second, nearly in line with supraventral, rather than last (superior) supraanal; not over 11 anteroanals.

t^1. Anals 7 + 8 to 11; front supraanal below supraventral; 6 to 8 luminous plates above or below caudal peduncle; last 3 or 4 posteroanals above anal base; gill rakers 6 + 19. californiense.

t^2. Anals 7 to 9 + 4 to 9 (12 to 17); 1 or 2 small luminous scales above or below caudal peduncle; first 3 or 4 posteroanals above anal

base; front
supraanals
level with
supraventral
above or slight
-ly before se-
cond ventral;
eye 3 to 3 2/5;
head 3 2/5 to
4. humboldti.

t^3. Anals 7 to 9 + 4 to 6 (11 to 15); eye 4; front supraanal lower than ventral, far advanced, above or slightly behind second ventral; hind anals entirely behind anals.

evermanni.

t^4. Anals 8 or 9 + 5 to 7; last anal ray base between first and second hind anal; front supraanal above or slightly before third ventral.

rufinum.

s^2. Front supraanal lower than second and much lower than ventral; 2 lower supraanals on more nearly straight line with uppermost than with supraventral.

u^1. Anals 10 + 6 (7); 45 to 47 scales; anal fin 23 or 24; second precaudal somewhat elevated, nearer first precaudal than lateral line.

aurolaternatum.

u^2. Anals 7 to 10 + 3 to 7 (10 to 16); 36 to 40 scales; Anal fin 18 to 20; second precaudal well before lateral line, nearer bases of lower caudal rays than first precaudal. affine.

u^3. Anals 7 to 9 + 7 to 11 (14 to 20); 42 to 45 scales; Anal fin 18 to 22; second precaudal somewhat elevated, well below lateral line. punctatum.

u^4. Anals 6 to 8+
7 to 9 (13
to 17); 38
scales;
Anal fin
20 or 21;
2 precaudals
far apart,
posterior in
or close to
lateral line.
phengodes.

h^3. Three supraanals; suprapectoral below pectoral base; anals 6 - 6.
parvimanum.

b^3. Two posterolaterals; anals always in 2 separate groups.

v^1. Supraventral
far below
lateral
line.

w^1. Last pre-caudal midway between lateral line and ventral profile of tail or lower; anal 4 to 6 - 6 to 8.

bonolto.

w^2. Last pre-caudal in or close to lateral line.

x[1]. First supraanal above or slightly behind second ventral; supraventral, first and second supraanals in line; anals 6 to 8 + 6 to 8.

reinhardti.

x^2. First supra-anal over third ventral; supra-ventral usually well above line through first and second supra-anals; anals 4 to 6 + 4 to 7.

macrochir.

v^2. Supraventral at or close to lateral line. hygomi.

Myctophum valdiviae Brauer

Myctophum valdiviae BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, 1904, p. (391) 398, fig. 6. Atlantic and Indian Oceans. -- GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, 1913, p. 84 (south of Kagoshima, to 300 fathoms). -- TAANING, Vidensk-Medd. Dansk. Naturh. Foren. Koben-Havn, vol. 86, 1928, p. 57 (diagnosis in key). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 57 (compiled).

Myctophum (Myctophum) valdiviae BRAUER, Deutsch. Tiefsee-Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 206, text fig. 127 (N. 24° 43' 4" W. 17° 1' 3", south of Canaries; N. 5° 5' 3" W. 13° 27' 5", Gulf of Guinea; N. 1° 27' 8" W. 10° 16' 5"; N. 1° 51' E. 0° 31' 2"; N. 2° 36' 5" E. 3° 27' 5"; S. 1° 56' 7" E. 7° 40' 5"; S. 26° 49' 2" E. 5° 54', off South west Africa;

S. 31° 46' 4" E. 84° 55' 7", north of New Amsterdam; S. 10° 8' 2" E. 97° 14' 9", north of Cocos; N. 7° 43' 2" E. 88° 44' 9", Bay of Bengal; N. 7° 1' 2" E. 85° 56' 5", N. 4° 56' E. 78° 15' 3", between Ceylon and Chagos; N. 2° 29' 9" E. 76° 47'; S. 4° 5' 8" E. 73° 24' 8"; S. 6° 19' 3" E. 73° 18' 9"; S. 2° 43' 8" E. 61° 12' 6", between Chagos and Seychelles; S. 3° 24' 6" E. 58° 38' 1", S. 3° 26' 2" E. 58° 34' 2"; S. 8° 34' 8" E. 53° 42' 8", between Seychelles and Zanzibar; S. 4° 38' 6" E. 51° 16' 6"; N. 4° 36' 1" E. 48° 37' 6", off north east Africa; N. 9° 6' 1" E. 53° 41' 2", N. 13° 2' 8" E. 46° 41' 6", Gulf of Aden). -- PAPPENHEIM, Deutsch. Sudpolar Exped., vol. 15, Zool., pt. 7, 1914, p. 194 (S. 11° 19' W. 18° 34', 1200 meters; S. 26° 59' W. 17° 6', 1340 meters; S. 8° 43' W. 11° 55', 3000 meters; N. 5° 27' W. 21° 41', 800 meters; N. 17° 28° W. 29° 42°, 3000 meters). -- TAANING, Rep. Danish Oceanogr. Exped., No. 5, vol. 2, A. 7, 1918, p. 151, fig. 47 (Atlantic).

Depth 5 1/2; head 3 1/4, width 2 1/4. Snout 4 4/5 in head; eye 5 3/5, 1 1/5 in snout, 1 1/5 in interorbital; maxillary reaches far behind eye but not to inclined hind preopercle edge, slender, length 1 1/2 in head; interorbital 4 1/2. Gill rakers 5? - 10?, lanceolate, little greater than gill filaments or 1 1/2 in eye.

Scales all fallen, but from pockets estimated about 28? in lateral line.

On back 2 photophores, first close below front of dorsal fin, second close behind base of dorsal fin and though none evident below adipose fin base; single antorbital superiorly; 1 opercular little above hind end of maxillary and behind preopercle edge; most of other photophores obsolete or lost.

D. origin much nearer snout tip than caudal base, about 6 branched rays; A. begins opposite first third of dorsal base; least depth of caudal peduncle 3 in head; pectoral nearly reaches opposite dorsal origin and 1 3/4 in head; ventral 2 3/4.

Uniform brownish, fins paler.

Atlantic, Indian and Pacific Oceans. This species has somewhat the aspect of **Lampanyctus** about the head. The elevated photophores close along the edge of the back, one before and another behind the dorsal fin, as well as one below the adipose fin distinguishes it from the other species of the genus.

14669 U. S. N. M. N. 30° 34' E. 129° 22', south of Kagoshima. In 200 fathoms. Albatross Collection 4920. Length 24 mm.

Myctophum parallelum Lönnberg

Myctophum parallelum LÖNNBERG, Zool. Anzeiger, vol. 28, 1904, p. 764. S. 48° 27' W. 42° 36', 2500 meters; Wiss. Ergebn. Schwed. Südpolar-Exped., vol. 5, pt. 6, 1905, p. 62 (type). -- PARR. Bull. Bingham, Oceanogr. Collection, vol. 3, art. 3, 1928, p. 57 (diag. in key). -- NORMAN, Discovery Rep., vol. 2, 1930, p. 320 (S. 34° 18' w. 19° 01' 10", 1000 meters; S. 33° 17' 40" E. 4° 30' 20", 2000 meters; S. 33° 20' to 33° 46' E. 15° 18' to 15° 08', 2500 meters; S. 33° 20' to 33° 46' E. 15° 18' to 15° 08', 2000 to 2500 meters; S. 33° 50' to 34° 13' E. 16° 04' to 15° 49', 350 to 400 meters).

Myctophum (Myctophum) parallelum BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 174, fig. 86 (compiled).

Depth 3 1/2 to 4; head 3 1/5 to 3 1/4. Snout 4 2/5 in head; eye 2 1/5 to 2 1/2, greatly exceeds snout; maxillary reaches opposite hind eye edge, broadly expanded; interorbital very narrow, 1/10 of eye.

Five pectorals, photophores all level; suprapectoral photophore on lower part of pectoral base near anterior subpectoral; 2 subpectorals, close, side by side, below pectoral fin base; 4 ventrals, second scarcely elevated; 1 supraventral, nearer ventral fin than lateral line; anals 15 to 18, in almost straight line, last 4 behind anal fin base; 3 supraanals, interspace between first and second greater than that between second and third, forms very obtuse angle; precaudals well separated. Two large infracaudal luminous plates, nearer caudal than anal.

D. 12; A. 22. Length 42 mm., without caudal. (Lönnberg, Norman.)

Atlantic and Antarctic Oceans.

Myctophum arcticum (Lütken)

Scopelus arcticus LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, 1892, p. 249, fig. 6. Mouth of Davis Strait. -- HOLT and BYRNE, Dep. Agric. Techn. Instruct. Ireland, Sci. Invest. 1910, No. 6, (1911), p. 12, fig. 2 (outline) (off west of Ireland, 602 to 630 fathoms).

Benthosema arcticum GOODE and BEAN, Oceanic Ichth., 1895, p. 78 (compiled).

Myctophum arcticum BRAUER, Zool. Anzeiger, vol. 28, 1904, p. 387 (diagnosis in key). -- TAANING, Rep. Danish Oceanogr. Exped. Medit., No. 5, 1918, p. 151, fig. 48 (Atlantic); Vidensk. Medd. Dansk naturh. Foren. Kobenhavn, vol. 86, 1928, p. 52 (diagnosis in key). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 57 (compiled).

Myctophum (Myctophum) arcticum BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 173, fig. 85 (Arctic Ocean; Davis Strait, Greenland).

Depth 3 2/5; head 3 1/8. Snout 6 1/3 in head from snout tip; eye 2 4/5, greatly exceeds snout; maxillary extends slight-behind eye, expansion 1 3/4 in eye, length 1 3/5 in head from snout tip; interorbital low.

Scales cycloid, 38 in lateral line.

Small antorbital photophore at lower front eye edge, perhaps also small one at upper front eye edge; 2 opercular, upper larger and level with upper hind maxillary edge; 3 branchiostegals; 5 pectorals, third interspace shortest; 3 subpectorals, first 2 at same level with lower opercular and first above second pectoral, third higher and close before lowest pectoral rays; 4 ventrals, equidistant; 1 supraventral, over ventral base little before first ventral; 15 or 16 anals, last 5 behind anal fin base; 3 supraanals, first over and little behind ventral level with supraventral, second but slightly higher and behind last ventral, third midway between and slightly advanced from first anal and its distance to lateral line; 2 precaudals, close, above lower rudimentary caudal rays. Infracaudal luminous plates 3.

D. III, 9, first branched ray 1 2/3 in total head length; adipose fin over last anal ray, length 3; A. III, 18, first branched ray 2; caudal 1 1/3, well emarginate; least depth of caudal peduncle 3; pectoral 1 2/3; ventral 2 1/10.

Length 34.5 mm. (Brauer.)

Arctic Ocean, Davis Strait.

Myctophum risso (Cocco)

Scopelus risso COCCO, Giorn. Sci. Lett. Arti Sicil., Palermo, vol. 77, 1829, pp. 15, 144, pl. 2, fig. 5. Messina. -- BONAPARTE, Fauna Italica, Pesc. 3, pt. 1, fasc. 27, 1840, description, pl., fig. 5 (Italy); Cat. Met. Pesc. Europ., 1846, p. 36 (Mediterranean).

Scopelus rissoi VALENCIENNES, Hist. Nat. Poiss., vol. 22, 1849, p. 446 (compiled). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 405 (Mediterranean, Messina, Madeira). -- CANESTRINI, Fauna Italia, Pesci, pt. 3, 1874, p. 123 (Sicily). -- CARUS, Prodr. Faun. Medit., vol. 2, 1893, p. 562 (compiled). -- LÜTKEN, Kon. Dansk. Vidensk. Sėlsk. Skrift. Kobenhavn, ser. 6, vol. 7, 1892, p. 248, fig. 5 (Mediterranean). -- COLLETT, Res. Camp. Sci. Monaco, vol. 10, 1896, p. 113 (N. 43° 24' 50" W. 21° 49' 45", north east of Azores).

Electrona rissoi GOODE and BEAN, Oceanic Ichth., 1895, p. 91, pl. 28, fig. 107 (Italy). -- MC CULLOCH, Biol. Res. Endeavour, vol. 3, pt. 3, April 21, 1915, p. 104 (between Gabo Island and Cape Everard, Victoria, 200 to 250 fathoms).

Electrona risso FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 570 (BONAPARTE material).

Myctophum rissoi BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 387 (diagnosis in key). -- TAANING, Rep. Danish Oceanogr. Exped., No. 5, vol. 2, A. 7, 1918, p. 28, figs. 9-10 (Mediterranean; Atlantic); Vidensk. Medd. Dansk Naturh. Foren. Kobenhavn, vol. 86, 1928, p. 52 (diagnosis in key). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 58 (compiled). -- NORMAN, Discovery Rep., vol. 2, 1930, p. 320 (S. 33^{1} 53' 45" E. 9° 26' 30", 1000 meters; S. 33° 50' to 34° 13' E. 16° 4' to 15° 49', 350 to 400 meters; S. 2^{1} 43' 30" W. 00° 56' 30", 125 to 175 meters).

Myctophum (Myctophum) rissoi BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 170, text fig. 83 (N. 0° 25' 8" E. 7° 0' 3", 2000 meters, Gulf of Guinea; S. 4° 8' 6" E. 51° 16' 6" 2000 meters, between Seychelles and Zanzibar*. -- ZUGMAYER, Res. Camp. Sci. Monaco, vol. 35, 1911, p. 21 N. 43° 4' 30" W. 19° 42', between Azores and Portugal). -- MURRAY and HJORT, The Depths of the Ocean, 1912, p. 613 (off Morocco; Azores; 3239 meters).

Depth 2 4/5 to 3; head 2 3/5 to 2 2/3, width 2. Snout 6 to 6 1/4 in head from snout tip; eye 2 to 2 1/4, much greater than snout or interorbital; maxillary reaches opposite hind eye edge though not quite to hind or vertical preopercle edge, expansion 2 3/5 to 3 in eye, length 1 3/5 to 1 2/3 in head from snout tip; interorbital 3 1/2 to 4 1/2, nearly level. Gill rakers 9 + 23, lanceolate, slender, 1 1/3 in eye, 3 times gill filaments.

Scales 28 or 29 in lateral, greatly enlarged or equal about 1/3 body depth; 3 above, 3 below, 12 or 13 predorsal to occiput. Caudal and ventrals at least scaly ventrally. Scales with 7 or 8 basal radiating striae; circuli fine, obsoletely apically.

Two minute antorbital photophores, one superior and one inferior along front eye edge; 2 operculars, upper larger and well elevated or on line with lower eye edge and upper subpectoral; 3 equidistant veiled branchiostegals; 5 pectorals, last interspace shortest; 1 suprapectorals, small and more or less veiled by gill covers, little before middle of pectoral fin base over lower subpectoral; 2 subpectorals, lower midway to little nearer upper than second pectoral, upper close below bases of lowest pectoral rays; 4 ventrals, first interspace longest; 1 supraventral at lowest third in space between lateral line and ventral base; 10 to 12 anals, last 2 behind anal fin base; 2 precaudals, close, low and posterior slightly higher. Male with 1 or 2 supracaudal luminous scales, female with 2 or 3 infracaudal.

D. III, 9, I or III, 10, I, first branched ray 1 2/3 to 1 3/4 in total head length; adipose fin 3 1/3 to 3 2/3; A. III, 13, I to III, 15, I, first branched ray 2 to 2 1/4; caudal 1 1/5? to 1 1/4, forked; least depth of caudal peduncle 2 3/4 to 3 1/5; pectoral 1 1/5 to 1 1/2; ventral 2 1/2 to 2 4/5.

Back dark brown, strongly contrasted with brilliant silvery white, like quicksilver, on greater part of sides and lower surfaces.

Atlantic, Indian and Pacific Oceans.

28420 U. S. N. M. Messina. Italian Commission.
Length 35 to 48 mm. 3 examples.

40062 U. S. N. M. Messina. Royal Museum Florence.
Length 39 to 53 mm. 7 examples.

49383 U. S. N. M. Messina. M. Belloti. Length 58 to 60? mm. 4 examples.

Myctophum tenisoni Norman

Myctophum tenisoni NORMAN, Discovery Rep., vol. 2, 1930, p. 321, fig. 27. 38 miles N. 39° E. of Jason Light, South Georgia, 90 meters; 32 miles N. 51° E. of Jason Light, 170 meters; S. 48° 18' W. 53° 99', 120 meters; S. 41° 43' 20" W. 42° 20' 40", 2000 meters; S. 45° 03' E. 17° 03', 850 to 950 meters; S. 46° 25' E. 15° 13', 96 meters; S. 52° 25' E. 9° 50', 650 to 700 meters; Drake Strait, S. 58° 27' 30" W. 67° 55', 77 meters; S. 46° 46' 03", 1050 to 1350 meters.

Depth 3 7/8 to 4 1/4; head 3 to 3 2/5. Snout 4 in head from snout tip; eye 2 3/5 to 3, greater than snout or interorbital; maxillary extends 1/6 eye diameter behind eye, expansion little convex behind and 1 4/5 eye, length 1 1/4 in head from snout tip; interorbital very low.

Very small antorbital photophore above front eye edge also above nostril, another somewhat larger at front eye edge below; 2 opercularars, upper larger and level with upper hind maxillary edge; 3 branchiostegals; 5 pectorals, level, last 2 interspaces little closer than first two; 1 suprapectoral, slightly lower than opercular on lower part of pectoral base; 2 subpectorals, close, side by side, little lower than suprapectoral and second over second pectoral; 4 ventrals, second scarcely elevated, equidistant; 1 supraventral, nearly at lowest third between lateral line and Ventral fin base; anals 17 or 18, level, 3 or 4 behind last anal ray;base; 3 supraanals, all close together, nearly form straight inclined line, first interspace greater than second, first spot level with supraventral and behind fourth ventral, uppermost midway between lateral line and anal fin origin; no postolateral; 2 close set precaudals, second scarcely elevated. Male with 6 or 7 supracaudal luminous scales, female with 4 or 5 infracaudal.

D. 11 to 13, origin slightly behind ventral origin, fin height 1 1/2 in head; adipose fin 3; A. 22 to 24, origin just behind last dorsal ray; caudal 1 1/5, forked; least depth of caudal peduncle 3 2/5; pectoral 1 1/4 to 1 1/5; ventral 2 1/8.

Uniform silvery. Length 69 mm. (Norman.)

South Atlantic and Antarctic Oceans.

Myctophum anderssoni Lönnberg

Myctophum anderssoni LÖNNBERG, Zool. Anzeiger, vol. 28, 1905, p. 763. S. 48° 54' W. 51° 40', 2700 meters; Wiss. Ergebn. Schwed. Sudpolar-Exped., vol. 5, pt. 6, 1905, p. 61 (S. 49° 56' W. 49° 56', 2700 meters). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 58 (diag. in key). -- NORMAN, Discovery Rep., vol. 2, 1930, p. 320 (S. 48° 34' W. 53° 34' 30", 90 meters).

Myctophum (Myctophum) anderssoni BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 172, fig. 84 (types).

Scopelus antarcticus (not GUNTHER) BOULENGER, Rep. Coll. Nat. Hist. Southern Cross, vol. 5, Pisces, 1902, p. 174.

Depth 4 1/2; head 3 1/4. Snout 5 2/5 in head; eye 3, greatly exceeds snout; maxillary reaches opposite hind eye edge, expansion 2 1/3 in eye, length 1 3/4 in head; interorbital low, eye impinging on upper profile.

Apparently no antorbital photophore; 2 opercular, upper larger and level with upper maxillary edge, lower more forward; 3 branchiostegals; 5 pectorals, last 2 closer; 3 subpectorals, first 2 close with second over second pectoral and third little higher before bases of lowest pectoral rays; 4 ventrals, equidistant; 1 supraventral before first ventral over ventral fin base; 15 anals, first 2 at same level and little higher than those immediately following and last 4 behind anal fin base; 2 precaudals, close set, low.

D. II, 9, origin slightly behind ventral origin; adipose fin 3 1/4 in head, over last anal rays; A. A. II, 17, origin below last dorsal ray base; caudal 1 3/5; least depth of caudal peduncle 3 1/6; pectoral 1 3/4; ventral 2 1/5.

Length 56 mm. (Brauer.)

South Atlantic, Antartic. Norman suggests possibly the slightly elevated 2 anterior anals may really be the supraanals series.

Myctophum antarcticum(Günther)

Scopelus antarcticus GÜNTHER, Ann. Mag. Nat. Hist., ser. 5, vol. 2, 1878, p. 184. Antarctic Ocean, 1975 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 196, pl. 51, fig. D (type). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 512 (reference).

Myctophum antarcticum BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 387 (diagnosis in key). -- LÖNNBERG, Schwed. Südpolar Exped., vol. 5, pt. 6, 1905, p. 60 (S. 64° 14' W. 52° 50', surface; S. 63° 24' W. 45° 40', 2800 meters; S. 49° 56' W. 49° 56', 2700 meters). -- ROULE, Deux. Exped. Antarct. Franc., Poiss., 1913, p. 20. -- REGAN, Trans. Roy. Soc. Edinburgh, vol. 49, pt. 2, 1913, p. 234 (S. 63° 51' W. 41° 50', 2300 fathoms; S. 71° 50' W. 23° 30', 1000 fathoms; S. 68° 32' W. 12° 49', 800 fathoms); Brit. Antarctic "Terra Nova" Exped., Zool., vol. 1, No. 4, 1916, p. 127, pl. 1, figs. 1-3 (S. 51° to 55° E. 167° to 168° and W. 78° to 177°). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 58 (diagnosis in key). --

NORMAN, Discovery Rep., vol. 2, 1930, p. 322, fig. 28 (S. 52° 25' E. 9° 50', 650 to 700 meters; S. 54° 30' E. 5° 34', 139 meters; S. 50° 59' W. 11° 44', 58 meters; Bransfield Strait, South Shetlands, S. 62° 27' W.58° 11' 30", 134 meters; S. 62° 48' W. 60° 05', 188 meters; S. 24° 31' E. 12° 15' 30", 117 meters; S. 53° 34' 15" W. 38° 36' 15", 134 meters).

Myctophum (Myctophum) antarcticum BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 168, text fig. 82 a-c (off Cape Colony; east of South America; Antarctic Ocean; east of Bouvet Island; 1500 to 2000 meters). -- PAPPENHEIM, Deutsch. Südpolar Exped., vol. 15, Zool. pt. 7, 1914, p. 192 (S. 43° 4' E. 36° 22', 2500 meters). -- BARNARD, Ann. South African Mus., vol. 21,pt. 1, June 1925, p. 240 (compiled).

Depth 3 7/8; head 3 7/8. Snout 5 2/5 in head; eye 2 1/2, greatly exceeds snout; maxillary reach 1/4 an eye diameter behind eye, truncate expansion 1 3/4 in eye, length 1 2/3 in head; interorbital low.

Scales cycloid, 30 to 37 enlarged in lateral line.

Antorbital photophores 2, small, both well separated on front eye edge; 2 operculars, upper larger and level with upper hind maxillary edge; 3 branchiostegals; 5 pectorals, last interspace shortest; 3 subpectorals, first above and little advanced from second which in turn just over and advanced from third pectoral, third level with first and both little higher than upper opercular close before bases of lowest pectoral rays; 4 ventrals, equidistant; 1 supraventral, little lower than first and third subpectorals over or close before ventral origin; 16 to 19 anals, last 4 behind anal fin base; 3 supra-anals, first level with third subpectoral over and little before third ventral, second over fourth ventral midway between same and lateral line, third close below lateral line over and little before first anal; 2 close set precaudals above lower rudimentary caudal rays. Males with 7 supracaudal luminous plates, females with 5 infracaudal.

D. III, 12, first branched ray 1 2/5 in head; adipose fin inserted opposite last 2/5 of anal base, length 2 1/8 in head; A. III, 18, inserted below last 2/5 of dorsal base, first branched ray 1 2/5; caudal small; least depth of caudal peduncle 3 2/5; pectoral 1 1/10; ventral 2.

Length 61 mm. (Brauer.)

Atlantic, Indian and Antarctic Oceans. Brauer gives D. ranging 13 to 15 and A. 19 to 23.

Myctophum subasperum (Günther)

Scopelus subasper GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 411. Pacific Ocean in S. Lat. 43° 30' E. Long. 123°. -- LÜTKEN, Kon Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, No. 6, 1892, p. 240, fig. 1 ("udenfor New York").

Myctophum subasperum BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1906, p. 388 (diagnosis in key). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 58 (diagnosis in key). -- NORMAN, Discovery Rep., vol. 2, 1930, p. 323, fig. 29 (S. 35° 18' W. 19° 01' 10", 1000 meters; S. 41° 33' 30" W. 17° 58', 5 meters).

Myctophum (Myctophum) subasperum BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 175, text fig. 87 (type of Myctophum megalops). --

Myctophum megalops PETERS, Monatsb. Akad. Wiss. Berlin, 1864, p. 393. Cape Horn.

?Scopelus colletti LÜTKEN, Kon, Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, 1892, p. 249, fig. 7. S. 30° to 28° 18' E. 96° to 97° 30", southern Indian Ocean; 600 miles west of Cape Horn.

?Benthosema colletti GOODE and BEAN. Oceanic Ichth., 1895, p. 78 (compiled).

Myctophum antarcticum (not GUNTHER) GILBERT, Bull. Amer. Mus. Nat. Hist. New York, vol. 30, art. 2, March 10, 1911, p. 13 (400 miles south west of Valparaiso, Chile). -- WAITE, Australiasian Antarctic Exped. Sci. Rep., ser. C., Zool. bot., vol. 3, pt. 1, 1913, p. 59, text fig. (head above), pl. 4, fig. 2 (between Macquarie and Auckland Islands; Macquarie Island), p. 74 (south west of Tasmania), -- REGAN, Brit. Antarctic "Terra Nova" Exped., 1910, Zool. vol. 1, No. 1, 1914, p. 1 (S. 55° 6' W. 120° 3'); Zool. 1, No. 4, 1916, p. 127, pl. 1, figs. 1-3 (S. 51° to 55° E. 167° to 168° to W. 78° to 177°). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 58 (compiled; part).

Depth 3 3/4 to 4 1/4; head 3 2/5 to 3 3/4, width 2 2/5. Snout 5 1/8 to 6 1/2 in head; eye 2 3/5 to 4 2/3, greater than or subequal with snout, 1 1/5 in interorbital; maxillary reaches below hind eye edge or not quite to hind preopercle edge, expansion convex behind and 1 3/4 to 2 in eye, length 1 1/2 to 1 3/4 in head; interorbital low. Gill rakers 9 + 20.

Scales 38 to 40 in lateral line, where enlarged; 3 above, 3 or 4 below. Scales cycloid, with age upper ones with deeply crenulated edges, forming ctenoid appearance.

Two small antorbital photophores, upper little above upper pupil edge and lower little below lower pupil edge; 2 opercular, upper larger, level with upper hind maxillary edge; 3 branchiostegals; 5 pectorals, nearly equidistant; suprapectoral nearly level with upper subpectoral or over first subpectoral, which close before bases of lowest pectoral fin rays; first subpectoral lower than opercular and behind second pectoral; 4 ventrals, equidistant; 1 supraventral about lower 2/5 in space between ventral fin base and lateral line; anals 15 or 16, in slight sigmoid curve or may form 3 groups, then 4 of last group behind anal fin base; 3 supraanals, first nearly level with second or supraventral close before third ventral, second forms inclined line with last ventral to uppermost in which nearly median, uppermost slightly below lateral line over anal origin; 2 precaudals, low, close together. Upper supracaudal luminous scales 6 or 7, infracaudals 1 to 5.

D. III, 10 to III, 12, first branched ray 1 2/5 to 1 3/4 in head; adipose fin 2 1/10 to 5 2/3; posterior over anal; A. III, 16 to III, 20, first branched ray 1 2/5 to 2 origin opposite posterior dorsal base; caudal 1 1/5 to 1 1/4, forked; least depth of caudal peduncle 2 7/8 to 3 1/3; pectoral 1 1/10, nearly reached second supraanal photophore; ventral 2 to 2 1/4.

Length 95 mm. (Günther, Brauer, Waite, Norman.).

Atlantic, Pacific, Indian and Antarctic Oceans. Regan says of the larva "the eyes grow at first at a slower rate than the fish as a whole, as is the rule in fishes generally, but later on grow faster than the rest of the fish, so that they are proportionately much larger in the adult than in the young. * * * this is due to the fact that the adults live at greater depths than the young.

Taaning evidently calls attention to Lutken's record under Myctophum arcticum (1928), as he says 'M. subasperum (Gthr. 1864) recorded from "off New York" (Oslo museum); verification of this record is desirable.'

Myctophum interruptum Taaning

Myctophum interruptum TAANING, Vidensk. Medd. Dansk naturh. Foren. København, vol. 86, 1928, p. 56. North Atlantic; diagnosis in key. -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 59 (diagnosis in key). -- NORMAN, Discovery Rep., vol. 2, 1930, p. 324 (S. 33° 53' 45" E. 9° 26' 30", 1000 meters; S. 35° 01' E. 10° 18', 250 meters).

Scopelua (Rhinoscopelus) rarus (part) LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, 1892, p. 246, fig. 4 (variation).

Rhinoscopelus rarus GOODE and BEAN, Oceanic Ichth., 1895, pp. 91, 512 (note). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 569 (copied).

Myctophum rarum BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 391 (reference).

Myctophum (Myctophum) rarum BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 204, figs. 123-124, (W. 42° W. 14°; south of Cape verde Islands N. 4° to 10° W. 29°). -- BARNARD, Ann. South African Mus., vol. 21, June 1925, p. 245 (on LÜTKEN).

Depth 5 1/5; head 4. Snout 5 in head; eye 3 1/2, greatly exceeds snout; maxillary reached 1/2 eye diameter behind eye, not nearly reaching hind preopercle edge, length 1 1/2 in head; interorbital rather low.

Scales cycloid, 38 to 40 in lateral.

Two small antorbital photophores, upper close above on upper front profile of eye, lower below lower pupil edge; 2 opercular, upper larger and level with hind upper maxillary edge; 3 branchiostegals; 6 pectorals, last interspace longest second subequal, first little less than either; 2 subpectorals; first little lower, before second pectoral, nearly in line with first pectoral and second subpectoral; 1 suprapectoral, close before origin of pectoral fin or over second pectoral; 2 ventrals, first close behind ventral fin base and second close before vent; 1 supraventral nearly at lowest third between ventral origin and lateral line; anals 6 to 8 + 5 to 7, postero-anals behind anal fin base; 3 supraanals, lowest rather close above and behind second ventral, second still little posterior and midway between anal origin and uppermost, which in turn directly over median and close below lateral line; 1 postero-lateral above and little behind last anteroanal, also close below lateral line; 2 precaudals, close, over lower rudimentary caudal rays. Long supracaudal luminous plate in male.

D. III, 9, first branched ray 1 4/5 in head; adipose fin 3 1/3; A. III, 14, first branched ray 1 4/5; caudal 1 1/6, well emarginate; least depth of caudal peduncle 3 3/4; pectoral 1 2/3; ventral 2 1/4.

Length 53 mm. (Brauer.)

Atlantic Ocean.

Myctophum crenulare Jordan and Gilbert

Myctophum crenulare JORDAN and GILBERT, Proc. U. S. Nat. Mus., vol. 3, 1880 (1881), p. 274. From stomach of Orcynus alalonga taken in Santa Barbara Channel, California; Bull. U. S. Nat. Mus., No. 13, 1882, p. 282 (compiled). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 87 (512) (reference).. -- BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 163 (diagnosis in key). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 59 (compiled); Proc. U. S. Nat. Mus., vol. 76, art. 10, 1929, p. , fig. 2 (type; type of Tarletonbeania tenua). -- FOWLER, Occas. Pap. Bishop Mus., vol. 9, No. 18, Feb. 1932, p. 5 4, (reference).

Myctophum crenularis BRAUER, Zool. Anzeiger, vol. 28, 1904, p. 390 (diagnosis in key).

Tarletonbeania crenularis JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 575 (compiled). -- GILBERT, Proc. U. S. Nat. Mus., vol. 48, 1915, p. 313 (midway between San Diego and San Clemente Island, at surface).

Myctophum procellarum (BEAN) JORDAN, Proc. U. S. Nat. Mus., vol. 3, 1880 (1881) p. 457. Off Straits of Fuca.

Tarletonbeania tenua EIGENMANN and EIGENMANN, Proc. Cal. Acad. Sci., ser. 2, vol. 3, 1890, p. 7. Probably near Coronado Islands (from mouth of Sebastodes minatus). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 89, pl. 28, fig. 105 (off Point Loma, California). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 575 (compiled).

Myctophum tenua BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 162 (diagnosis in key).

Myctophum affine (not LÜTKEN) FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 69, fig. 13.

Depth 4 1/4; head 3 2/3, width 3. Snout 7 1/3 in head; eye 3 1/2, greater than snout or interorbital; maxillary reaches back well beyond eye, nearly opposite well inclined hind preopercle edge, slender, length 1 2/5 in head; interorbital 3 3/4, convex. Gill rakers 7 + 13, lanceolate, nearly equal eye; gill filaments 4/5 gill rakers.

Scales 49 in lateral line to caudal base and 2 more on latter; enlarged in lateral line and tubes simple; 3 above, 5 below, 21 predorsal to occiput. Scales with 3 or 4 basal radiating striae; 7 or 8 broad, marginal apical points; circuli fine, obsolete.

Two antorbital photophores, small, upper well elevated, lower larger and below pupil level; 2 opercular**s**; upper larger and on line with lower eye edge and upper subpectoral; 3 equidistant branchiostegals; 6 pectorals, first and second interspaces subequally largest; suprapectoral very small, close before and below pectoral fin origin; 2 subpectorals, first or lower in inclined line with suprapectoral and second pectoral; 6 ventrals, equidistant; 1 supraventral, about lowest 2/5 between lateral line and ventral fin origin; anals 10 + 4, nearly all on same level, equidistant, posteroanals behind anal fin base; 3 supraanals, first little before and closer to second than to fifth ventral though over last, uppermost below lateral line over and little behind second supraanal; 1 mediolateral below second supraanal; 1 mediolateral below lateral line and little behind last anteroanal; 1 precaudal, low.

D. III, 10, I, first branched ray 1 1/2 in head; adipose fin 4 1/10; A. III, 15, I, first branched ray 1 4/5; caudal subequal with head, emarginate; least depth of caudal peduncle 4 4/5; pectoral 1 3/5; ventral 2 1/4.

Back brown, skin of scale pockets dark to dusky.

23945 U. S. N. M. N. 49° W. 151°

Dr. W. H. Dall. No. 716. Length 65? mm.

27402 U. S. N. M. California. Dr. D. S. Jordan. Length 52? mm. Type of Myctophum crenulare.

41882 U. S. N. M. Off Point Loma, California. Dr. C. H. Eigenmann. Length 71? mm.

Myctophum cuvieri (Castelnau)

Scopelus cuvieri CASTELNAU, Proc. Zool. Acclim. Soc. victoria, vol. 2, 1873, p. 106. Knob Island, Torres Strait. -- MACLEAY, Proc. Linn. Soc. New South Wales, vol. 6, 1881, p. 222 (copied). -- LUTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, 1892, p. 242 (type). -- WAITE, Records Australian Mus., vol. 5, 1904, p. 156 (note on type).

Myctophum cuvieri PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 59 (note).

Depth 3 4/5 in total, deepest just behind pectoral origin; head 4. Eye very large, 2 in head; maxillary very long, almost reaches end of preopercle, slender, gradually expanded behind where rounded; lower jaw longer than upper; teeth numerous, villiform.

Scales 40 or 41 in lateral line, very broad. Very large opercular scale. Scales strongly ciliated or denticulated on margins.

Supraanal photophores form straight line, central one more distant from upper than from lower; ventrals 4 or 5.

D. II, 10, inserted considerably nearer snout than caudal base; adipose fin arched, pointed, above end of anal; A. II, 17, behind end of dorsal; caudal rays 19 and several short ones each side, strongly forked; pectoral 17, twice long as ventral, reach equally far back; ventral 8, inserted rather before dorsal.

Dark brown where scales have fallen, retained scales brilliant irridated silver. Fins bright yellow. Length about 90 mm. (Castelnau; Waite.)

Queensland. This imperfectly known species has not been seen since originally discovered. The original type, according to Waite, in the Paris Museum in 1904.

Myctophum rarum (Lütken)

Scopelus (Rhinoscopelus) rarus LUTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kobenhavn, ser. 6, vol. 7, 1892, p. 246, fig. 4. N. 33°?; N. 20° W. 48° to 50°, S. 34° 50' W. 4° 30'; S. 37° 40' E. 12°.

Rhinoscopelus rarus GOODE and BEAN, Oceanic Ichth., 1895, pp. 99, 512 (compiled). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 569 (compiled).

Myctophum rarum (not BRAUER 1906 or BARNARD 1925) BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 390 (diagnosis in key). -- TAANING, Vidensk. Medd. Dansk naturh. Foen. Kobenhavn, vol. 86, 1928, p. 55 (diagnosis in key). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 59 (diagnosis in key).

Myctophum rarum forma integer BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 391 (diagnosis in key). -- PAPPENHEIM, Deutsch. Südpolar Exped., vol. 15, Zool. 7, 1914, p. 194 (S. 23° 33' W. 20° 51', 3000 meters).

Myctophum (Myctophum) rarum var. integer BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 205, figs. 125 and 126. N. 34° to 46° 1 W. 15° 30' to 16°, Madeira; 3° 55' E. 7° 48' 5", Gulf of Guinea.

Depth 4 3/4; head 3 9/10. Snout 5 in head; eye 3 1/3, greater than snout; maxillary extends half and eye diameter behind eye, narrow, length 1 1/2 in head; interorbital very low.

Two small antorbital photophores, upper well elevated on upper front eye edge, lower below lower pupil edge on lower front eye edge; 2 operculars, upper larger, close above hind end of maxillary; 3 branchiostegals; 5 pectorals, last interspace longest and third shortest; 1 suprapectoral, close before bases of upper pectoral rays; 2 subpectoral, first forms vertical line with second pectoral and subprapectoral, nearly equidistant, second subpectoral little higher though close below lowest pectoral ray base; 4 ventrals, equidistant; 1 supraventral, about level with second subpectoral or slightly above lowest third in space between ventral fin base and lateral line; anals 7 + 6, level, posteroanals behind anal fin base; 2 supraanals, lower little lower than supraventral little behind vent and upper little below lateral line before first anteroanal; 1 posterolateral, behind last anteroanal little below lateral line; 2 precaudals, close set, above lower rudimentary caudal rays, posterior little higher.

D. III, 9, first branched ray 1 3/5 in head; adipose fin 3; A. III, 13, first branched ray 1 3/5, origin below middle of dorsal base; caudal 1 1/8, deeply emarginate; least depth of caudal peduncle 3; pectoral 1 1/2; ventral 2/3.

Length 23 mm. (Brauer.)

Atlantic Ocean.

Myctophum imitator Parr

Myctophum imitator PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 60 (on GILBERT); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 6, fig. 3 (type of Myctophum suborbitale).

Myctophum suborbitale (not WEBER 1913) GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, 1913, p. 82. Suruga Bay, to 300 fathoms.

Lampanyctus alatus (not GOODE and BEAN) BREEDER, Bull. Bingham Oceanogr. Collection, vol. 1, art. 1, 1927, p. 17 (Tongue of the Ocean; South West Harbor, New Providence; Swan Island; Green Cay; Turneffe Cay, Bahamas; 300 to 400 fathoms).

Myctophum simile TAANING, Vidensk. Medd. Dansk. Naturhist. Foren. vol. 86, 1928, p. 56. North Atlantic; diagnosis in key.

Depth 4; head 2 7/8 to 3, width 2. Snout 4 1/2 to 6 1/3 in head from snout tip; eye 2 1/4 to 2 9/10, greatly exceeds snout or interorbital; maxillary extends well behind eye nearly to vertical preopercle edge, expansion 1 3/4 in eye, length 1 2/5 to 1 1/2 in head; opercle posteriorly extended, wholly covers upper and lower pectoral photophores, notched opposite pectoral base. Gill rakers 4 + 10?, lanceolate, much greater than gill filaments or 1 1/2 in eye.

Scales 34 in lateral line. Scales very caducous, most all fallen.

Minute antorbital photophore on upper side of nostril; well developed subocular spot on cheek below hind part of eye near maxillary edge; 2 operculars, upper larger and entirely below level of eye, lower opercular very small, behind end of maxillary branchiostegals?; 5 pectorals, first 2 interspaces wider than posterior 2, first pair nearest median line and fifth pair more widely separated at outer ventral ray bases; 1 suprapectoral, above lower subpectoral and second pectoral, obliquely above and anterior to pectoral base or slightly nearer pectoral fin than lateral line; 2 subpectorals, lower anterior to upper though but little below; 4 ventrals, second elevated and vertically above first or level with second subpectoral, other 3 contiguous to midventral line and interspace of first and third longer than between third and fourth; 1 supraventral over fifth pectoral or even slightly advanced and distant from lateral line 1/4 its distance from ventral bases; 6 + 5 anals, anteroanals equidistant from anal fin base, first posteroanal above last anal ray base; 3 supraanals, sharply angulated, anterior or lowest horizontally in front of second or very slightly above line joining second with elevated ventral, second median between lateral line and first anal ray base, upper most on lateral line above first anteroanal; 1 posterolateral on lateral line, above second or third anal ray before last; 2 precaudals, widely separated, first at bases of rudimentary caudal rays, second obliquely above and posterior on lateral line. Two infracaudal luminous scales.

Dusky, with little luster.

Japan. Allied with Myctophum pterotum and Myctophum fibulatum, but differing from all the known species in the genus by the presence of a small round photophore on the cheek below the posterior portion of the eye. As my materials are imperfect, I have modified many of the items in the above description from Gilbert.

74473 U. S. N. M. Albatross Collection 5064. Length 21 mm. Type of Myctophum suborbitale.

74500 U. S. N. M. Albatross Collection 4920. Length 13 mm. Paratypes of Myctophum suborbitale. 2 examples.

74661 U. S. N. M. Albatross Collection 4909. Length 13 mm.

74662 U. S. N. M. Albatross Collection 5084. Length 25 mm.

Myctophum pterotum (Alcock)

Scopelus (Myctophum) pterotus ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 6, 1890, p. 217. N. Lat. 18° 30' E. Long. 84° 46', 98 to 102 fathoms, off Madras; Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 333 (reference).

Scopelus pterotus ALCOCK, Illustrat. Zool. Investigator, Fishes, pt. 2, 1894, pl. 9, fig. 3; Cat. Deep Sea Fishes Indian Mus., 1899, p. 162 (Bay of Bengal, in 98 to 102 fathoms; Arabian Sea, in 370 to 419 fathoms).

Myctophum pterotum BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 388 (diagnosis in key). -- GILBERT, Mem. Carnegie Mus., vol. 6, No. 21, Aug. 1913, p. 81 (Kagoshima). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 86 (Macassar Strait, 11 meters). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 157 (Macassar Strait, 11 meters). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, 1925, p. 242 (off Cape Point). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 70 (copied). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 60 (compiled); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 7 (type of Myctophum gilberti). -- NORMAN, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 512, fig. 2 (types). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 22 (N. 22° 50' 2" W. 109° 8' 15", 525 fathoms; N. 16° 14' W. 99° 36' 30", 625 fathoms).

Myctophum (Myctophum) pterotum BRAUER, Deutsch.. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 182, text fig. 94 (not 93) (N. 7° 1' 2" E. 85° 56' 5", Bay of Bengal; S. 4° 5' 8" E. 73° 24' 8", Chagos; S. 2° 43' 8" E. 61° 12' 6"; Seychelles; S. 4° 34' 8" E. 53° 42' 8"; S. 37° 31' 2" E. 17° 1' 6", Cape Colony).

-- PAPPENHEIM, Deutsch. Südpolar Exped., vol. 15, Zool., pt. 7, 1914, p. 193 (N. 17° 28' W. 29° 42', 3000 meters, off Cape Verde Islands; N. 28° 42' W. 34° 33').

-- BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 242 (compiled).

?Scopelus pyrsobolus ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 6, 1890, p. 218, pl. 8, fig. 3. Off Madras coast (N. Lat. 15° 38' E. Long. 82° 30', in 920 to 690 fathoms). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 512 (reference). -- ALCOCK, Journ. Asiatic Soc. Bengal, vol. 66, pt. 2, 1896, p. 333 (off Madras coast, in 920 to 960 fathoms); Cat. Deep Sea Fish. Indian Mus., 1899, p. 163 (Bay of Bengal; off Madras coast; in 690 to 920 fathoms); Illustrat. Zool. Investigator, Fishes, pt. 7, 1900, pl. 30, fig. 3. -- BOULENGER, Ann. Mag. Nat. Hist., ser. 7, vol. 7, 1901, p. 261 (N. Lat. 24° 29' E. Long. 56° 56', in 225 fathoms, Sea of Oman).

Myctophum gilberti EVERMANN and SEALE, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 55, fig. 1. Bulan and Manila.

Depth 4 to 4 1/2; head 2 2/3 to 3 1/5, width 2 1/5 to 2 3/5. Snout 6 to 6 1/4 in head from snout tip; eye 3 1/8 to 3 1/4, greater than snout or interorbital; maxillary reaches little beyond eye but not quite to slightly inclined preopercle edge, expansion 2 1/4 to 3 in eye, length 1 2/3 to 1 7/8 in head from snout tip; interorbital 4, slightly convex. Gill rakers 7 + 18, lanceolate, 1 2/5 in eye, subequal with gill rakers.

Scales 29 or 30 in lateral line; 3 above, 3 below, 18or 19? predorsal. Scales very caducous, mostly fallen.

Small antorbital photophore at upper front eye edge; 3 operculars, upper larger and usually veiled, level with lower half of pupil on lower eye edge, lower opercular behind upper end of maxillary, often veiled or inconspicuous; 3 equidistant veiled branchiostegals; 5 pectorals, third interspace shortest and last spot little above ventral fin base; 1 suprapectoral, well before pectoral fin origin or third pectoral, or little behind first or lower subpectoral, about midway between lateral line and pectoral fin origin; 2 subpectorals, first or lower nearly on same level as upper and little behind second pectoral, upper close before and below lowest pectoral fin ray bases; 4 nearly equidistant ventrals, first over and behind second; 1 supraventral at upper 2/5 in space between ventral fin base and lateral line; 5 or 6 + 4 or 5 anals, first posteroanal above last anal fin ray base; 3 supraanals, first little though distinctly higher than second, little behind third ventral, second supraanal behind fourth ventral or opposite anal fin origin and third or uppermost close behind last anteroanal or close below lateral line; 1 posterolateral over and slightly posterior from last anteroanal close below lateral line; 2 wide set precaudals, first low near lower edge of tail and posterior high and close below end of lateral line. Male with 3 or 4 luminous supracaudal scales.

D. III or IV, 9, I, first branched ray 1 2/5 to 1 3/4 in total head length; adipose fin 3 1/8 to 3 3/4; A. III, 15, I, first branched ray 1 3/4 to 2 1/5; caudal 1 1/5 to 1 1/4, forked; least depth of caudal peduncle 2 4/5 to 3; pectoral 1 to 1 1/10; ventral 2 1/2 to 2 3/5.

Brownish, pockets of scales often dusky. Sides of head and scales on sides silvery white, with iridescent reflections. Iris silvery white. Snout pale. Fins pale.

Indian and Pacific Oceans. Scopelus pyrsobolus Alcock was founded on an example over 75 mm. long. It is very indifferently figured and described, but appears to be the present species.

D. 5211. Panalangan Point, Talajit Island, N. 33° E., 5.25 miles (N. 11° 51' 35" E. 124° 14'), east of Masbate Island. In 155 fathoms. April 17, 1908. Length 38 to 46 mm. 3 examples.

D. 5190. Pescador Island, S. 9° E., 10.70 miles (N. 10° 8' 15" E. 123° 16' 45"), Tanon Strait, east coast of Negros. In 295 fathoms. April 1, 1908. Length 12 to 31 mm. 32 examples.

D. 5228. Romblon Light, N. 3° E., 6.25 miles (N. 12° 29' 30" E. 122° 15' 45"), south of Romblon. May 5, 1908. Length 44 to 57 mm. 33 examples.

55900 U. S. N. M. Bulan, Sorsogan. Bureau of Fisheries 18628 (3841). Length 62 mm. Type of Myctophum gilberti.

74666 U. S. N. M. Kagoshima, Japan. Albatross Collection . Length 36 to 53 mm. 19 examples.

74667 U. S. N. M. Albatross Collection . Length 36 to 60 mm. 23 examples.

Myctophum glacialis (Reinhardt)

Scopelus glacialis REINHARDT, Kon, Danske Vidensk. Selsk. Naturv. Math. Afh. Kjøbenhavn, vol. 6, 1837, p. CX. Omenak. Ritesback and Jokobshavn, Greenland; vol. 7, 1838, p. 126 (note). -- KROYER, Poiss. mer du Nord, Voy. Scandin. Laponie, Gaimard, 1847, pl. 16, fig. 2; Naturh. Tidsskr. Kobenhavn, ser. 2, vol. 2, 1846-49, p. 230 (discussion). -- GILL, Proc. Acad. Nat. Sci. Philadelphia (Cat. Fishes East Coast), 1861, p. 53 (reference). -- GUNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 407 (compiled); Rep. Voy. Challenger, vol. 22, 1887, p. 196 (compiled). -- LUTKEN, Vidensk. Medd. Dansk Naturh. Foren. Kobenhavn, 1891 (1892), p. 203 (Godthaab, Gadhavn, Ikerasak, Kangatsiak, Frederikshaab, Sukkertoffen, Umanok, Jakobshavn, Ritenbenk, Hammerfest; discussion); Kon. Dansk. Vidensk. Selsk. Skrift. Kjøbenhavn, ser. 6, vol. 7, 1892, p. 250, fig. 8 (N. 36° 29' W. 2° 28').

-- HOLT, Proc. Zool. Soc. London, 1898, p. 552, pl. 46, figs. 1-5, pl. 47, figs. 6-7 (Faroe Channel). -- HOLT and BYRNE, Dep. Agric. Techn. Instruct. Ireland, Sci. Invest., 1910, No. 6 (1911), p. 13, fig. 3 (outline) (Farö Channel and Irish Coast, 1150 fathoms).

Myctophum glaciale JORDAN and GILBERT, Bull. U. S. Nat. Mus., No. 16, 1882, p. 283 (compiled). -- SMITT, Hist. Scandinavian Fishes, ed. 2, pt. 2, 1895, p. 491, fig. 235 (Norway). -- COLLETT, Forhand. Vidensk. Seksl. Christiania, 1903 (1904), p. 113 (Sondmor, Hardanger-fjord, Trondhjemsfjord, Hammerfest). -- BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 388 (diagnosis in key). -- FAGE, Ann. Inst. Oceanogr. Monaco, vol. 1, No. 7, 1910, p. 12, pl. 1, fig. 6 (photograph) (Gulf of Lyon). -- TAANING, Rep. Danish Oceanogr. Exped., No. 5, 1918, p. 31, figs. 11-13 (Mediterranean, Sea of Marmora, Atlantic).

-- JOHNSEN, Bergens Mus. Aarbok, 1921-22 (1923), No 6, p. 1 (North Atlantic). -- TAANING, Vidensk. Medd Dansk. Naturh. Foren. Kobenhavn, vol. 86, 1928, p. 56 (North Atlantic; Mediterranean; diagnosis in key). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 60 (compiled). -- NORMAN, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 514 (type of Myctophum scoticus); Discovery Rep., vol. 2, 1930, p. 324 (N. 13° 25' W. 18° 22', 900 meters).

Myctophum (Myctophum) glaciale BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 180, fig. 92 (Copenhagen Museum examples). -- ZUGMAYER, Res. Camp. Sci. Monaco, vol. 35, 1911, p. 24 (N. 36° 51' 30" W. 1° 30', 1300 meters; N. 38° 2' E. 1° 50' 30", surface; N. 37° 39' E. 0° 20', 2170 meters; N. 36° 17' W. 1° 58', 1800 meters; N. 37° 46' 10" W. 0° 5', 520 meters).

Scopelus mulleri (not GMELIN) GILL, Proc. Acad. Nat. Sci. Philadelphia (Cat. Fishes East Coast), 1861, p. 53 (reference).

Scopelus mülleri COLLETT, Forhand. Vidensk. Selsk. Christiania, 1878, No. 4, p. 23 (N. 63° 5' W. 3°); No. 14, 104 (Nordhave Exped.); 1879, No. 1, p. 84 (Söndmör, Hardangerfjord?, Hammerfest); Norges Nordh. Exped. Zool., Fische, 1880, p. 158. -- GOODE and BEAN, Bull. Mus. Comp. Zool., vol. 10, 1883, pp. 190, 220 (N. 38° 20' 30" W. 73° 26' 40", 395 fathoms). -- MINER, Rep. U. S. Fish Comm., pt. 11, 1883, (1885), p. 197 (N. 39° 44' 30" W. 71° 4', 1022 fathoms).

Benthosema mulleri GOODE and BEAN, Oceanic Ichth.,1895, p. 76, pl. 22, fig. 85 (N. 34° to 44° W. 50° to 75°, 2369 fathoms). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 574 (compiled).

Scopelus scoticus GÜNTHER, Rep. Voy. Chellenger, vol. 31, pt. 2, 1889, p. 31, Farðe Channel.

Depth 4 to 4 2/5; head 3 to 3 1/3, width 2 1/5 to 2 1/5. Snout 4 3/4 to 5 in head from snout tip; eye 2 1/2 to 2 3/5, greater than snout or interorbital; maxillary reaches little beyond eye though not quite to vertical hind preopercle edge, expansion 2 to 2 1/4 in eye, length 1 2/5 to 1 1/2 in head from snout tip; interorbital 4 to 4 1/5, nearly level. Gill rakers 4 + 13, lanceolate, slender, 1 2/5 in eye or 4 times gill filaments.

Scales 34 to 36 in lateral line; 4 above, 3 or 4 below, 13 or 14 predorsal to occiput. Caudal base scaly. Scales caducous, most all fallen.

Two small antorbital photophores, upper close on upper front eye edge, lower below level of pupil; 2 operculars, upper larger and in line with lower eyeyedge and front or lower subpectoral; 3 veiled equidistant branchiostegals; 5 equidistant pectorals; 1 suprapectoral, veiled by opercle, before and above pectoral fin origin in line with lower subpectoral and second pectoral, also nearer pectoral fin origin than lateral line; 2 subpectorals, first on lower 4 equidistant ventrals; 1 supraventral, midway between lateral line and ventral fin origin; 6 + 7 anals, only first 2 posteroanals above anal fin base; 3 supraanals, first 2 nearly on same level with supraventral, first little behind second ventrals, second little before or above fourth ventral, third or uppermost on lateral line above or little behind first anteroanal; 1 posteroanal above and little posterior to last anteroanal; 2 wide set precaudals, first low and second elevated though well below end of lateral line. Male with 2 supracaudal luminous scales, female with 1 infracaudal.

D. III, 10, I, first branched ray 1 1/2 to 1 3/5 in total head length; adipose fin 2 7/8 to 3; A. III, 15, I or III, 16, I, first branched ray 1 3/5 to 2; caudal 1 1/3, well forked; least depth of caudal peduncle 3 to 3 1/3; pectoral 1 4/5 to 2; ventral 2 1/4.

Brown, usually most all scales lost so scale pockets dusky. Iris and sides of head with silvery white reflections. Fins all uniformly pale.

Atlantic Ocean and Mediterranean.

26090 U. S. N. M. Off Block Island. U. S. F. Comm. 1880. Length 38 to 56 mm. 5 examples.

26091 U. S. N. M. Off Block Island. U. S. F. Comm. 880. 1880. Length 38 to 52 mm. 5 examples.

26131 U. S. N. M. Off Newport, R. I. U. S. F. Comm. Lengrh 38 to 40 mm. 2 examples.

26169 U. S. N. M. Newport, Rhode Island. U. S. F. Comm. 893. 1889. Length 49 to 58 mm. 2 examples.

28774 U. S. N. M. Bur. Fisher. Length 43 to 63 mm. 18 examples.

28775 U. S. N. M. N. 39° W. 60°. Fish Hawk Collection. Length 37 to 61 mm. 13 examples.

28774 U. S. N. M. N. 39° 46' 30" W. 69° 47', 705 fathoms. U. S. Fish Comm. 936. Length 64 mm?

28783 U. S. N. M. Length 67 mm.

28799 U. S. N. M. Length 40 mm.

28839 U. S. N. M. N. 39° W. 70°. U. S. Fish Comm. 155. Length 58 to 65 mm. 2 examples.

28851 U. S. N. M. N. 39° 55' W. 70° 28'. U. S. Fish Comm. Length 60 to 63 mm. 3 examples.

28877 U. S. N. M. Vineyard Sound, Mass. U. S. Fish Comm. 995. Length 35 to 43 mm. 4 examples.

28884 U. S. N. M.

Length 23 to 57 mm. 2 examples.

28935 U. S. N. M. N. 39° W. 69°. U. S. Fish Comm. 1031. Length 39 to 60 mm. 13 examples. All in poor condition.

28945 U. S. N. M. N. 39° W. 69°. U. S. Fish Comm. 1030. Length 36 to 53 mm. 5 examples.

28950 U. S. N. M. N. 39° 57' W. 69° 16'. U. S. Fish Comm. Length 49 to 55 mm. 2 examples.

31642 U. S. N. M. N. 39° 57' W. 70° 37', 192 fathoms. August 18, 1882, U. S. Fish Comm.1113. Length 42 to 58 mm. 8 examples.

31665 U. S. N. M. N. 39° 56' W. 70° 35', 245 fathoms. August 18, 1882. U. S. Fish Comm.1112. Length 41 to 65 mm. 60 examples.

31757 U. S. N. M. N. 40° W. 68°. Albatross Collection 1120. Length 48 to 60 mm. 3 examples.

31764 U. S. N. M. N. 39° 34' W. 71° 56'. U. S. Fish Comm. Length 50 to 53 mm. 2 examples.

31779 U. S. N. M. N. 39° W. 71°. U. S. Fish Comm. Length 18 to 53 mm. 4 examples.

31780 U. S. N. M. N. 39° W. 71°. U. S. Fish Comm. Length 38 to 55 mm. 6 examples.

32665 U. S. N. M. N. 37° W. 74°. Albatross Collection. Length 36 to 65 mm. 9 examples.

32666 U. S. N. M. N. 37° W. 74°. Albatross Collection. Length 67 mm.

32672 U. S. N. M. N. 37° 20' 42' W. 74° 17' 36". Bur. Fisheries . Length 50 to 65 mm. 9 examples.

33284 U. S. N. M.

Length 58 mm.

33288 U. S. N. M. N. 40° 04' 20" W. 68° 43' 50". Albatross Collection . Length 38 to 58 mm. 11 examples. All in poor condition.

33299 U. S. N. M.

Length 48 to 53 mm. 3 examples. All very poorly preserved.

33318 U. S. N. M.

Length 48 mm.

33473 U. S. N. M. N. 40° W. 67°. Albatross Collection 2083. Length 54 to 65 mm. 5 examples.

33503.U. S. N. M. .

Length 53 to 64 mm. 4 examples.

33547 U. S. N. M. N. 39° W. 68°. Albatross Collection 2101. Length 38 to 64 mm. 7 examples.

35454 U. S. N. M. N. 39° 54' 30" W. 71° 05' 00", Albatross Collection 2185. Length 34 to 40 mm. 4 examples.

35463 U. S. N. M. N. 39° W. 71°. Albatross Collection 2187. Length 57 to 64 mm. 4 examples.

35613 U. S. N. M. N. 39° 45" W. 71° 35' 15" Albatross Collection . Length 59 to 65 mm. 5 examples.

51583 U. S. N. M. N. 39° W. 69°. U. S. Fish Comm. 1096. Length 48 to 54 mm. 2 examples.

51585 U. S. N. M. N. 39° 51' W. 69° 47'. U. S. Fish Comm. Length 41 to 60 mm. 3 examples.

8 examples U. S. N. M.

Albatross Collection 2023. Length 47 to 65 mm.

1 example U. S. N. M. Albatross Collection 1157. Length 51 mm.

3 examples U. S. N. M. Albatross Collection 2427. Length 55 to 68 mm.

2 examples U. S. N. M. Albatross Collection 2532. Length 57 to 58 mm.

4 examples U. S. N. M. Albatross Collection 2546. Length 52 to 65 mm. In poor condition.

1 example U. S. N. M. Albatross Collection 2585. Length 70 mm.

1 example (with 28837 U. S. N. M). N. 39° W. 70° U. S. Fish Comm. 954. Length 50 mm.

Myctophum laternatum Garman

Myctophum laternatum GARMAN, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 267, pl. 56, fig. 1. N. Lat. 7°-27° W. Long. 7°111°, to 1168 fathoms (West Coast Central America and Gulf of California). -- GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, August 1913, p. 77 (near Nagasaki, in 300 fathoms). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 86 (Banda Sea, in 1500 meters). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 156 (fig. 58 on p. 152) (WEBER'S materials). -- REGAN, Fishes Brit. Antarctic "Terra Nova" Exped., Nat. Hist. Rep. Zool., vol. 1, No. 4, 1916, p. 139, pl. 6, fig. 7 (S. 35° 29' W. 50° 26', 2 meters).

-- TAANING, Rep. Danish Oceanogr. Exped. Medit., No. 5, 1918, p. 150, fig. 46 (Bay of Cadiz; off Azores; off Grand Bank; 220 to 1600 meters). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. (61) 67 (N. 32° 24' W. 64° 29', 5000 feet). -- NORMAN, Discovery Rep., vol. 2, 1930, p. 324 (S. 33° 25' E. 6° 31', 1000 meters; S. 34° 5' 15" E. 16° 00' 45", 1000 meters; S. 33° 20' to 33° 46' E. 15° 18' to 15° 08', 2000 to 2500 meters; S. 2° 43' 30" W. 00° 56' 30", 125 to 175 meters; S. 2° 49' 30" W. 9° 25' 30", 800 to 100 meters; S. 00° 56' W. 14° 8' 30", 250 meters; N. 3° 04' 45" W. 16° 52', 125 to 225 meters; N. 8° 12' W. 18° 49', 120 meters). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 23, fig. 8 (outline) (N. 16° 14' W. 99° 36' 30", 625 fathoms; N. 11° 5' W. 89° 20' 45", 300 fathoms).

Myctophum (Myctophum) laternatus BRAUER, Deutsch.

Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 178, text figs. 89-91 (N. 14° 39' 5" W. 21° 51' 8", N. 5° 5' 3" E. 13° 27' 5", S. 3° 55' E. 7° 48' 5"; S. 26° 3' 6" E. 93° 43' 7", between New Amsterdam and Sumatra; S. 10° 8' 2" E. 97° 14' 9"; N. 7° 1' 2" E. 85° 56' 5", Bengal Bay; N. 4° 56' E. 78° 15' 3", between Ceylon and Chagos; N. 2° 29' 9" E. 76° 47' S. 4° 5' 8" E. 73° 24' 8"; S. 6° 19' 3" E. 73° 18' 9", S. 4° 5' 8" E. 70° 1' 9", between Chagos and Seychelles; S. 2° 38' 7" E. 65° 59' 2"; S. 3° 24' 6" E. 58° 38' 1"; S. 3° 26' 2" E. 58° 34' 2"; S. 4° 34' 8" E. 53° 42' 8", between Seychelles and Zanzibar; S. 4° 38' 6" E. 51° 16' 6"; S. 4° 45' E. 48° 58' 6"; N. 9° 6' 1" E. 53° 41' 2", south of Sokotra; N. 13° 2' 8", E. 46° 41' 6").

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ZUGMAYER, Res. Camp. Sci. Monaco, vol. 35, 1911, p. 23 (N. 35° 13' W. 8° 6', 1800 meters, off Morocco).

-- PAPPENHEIM, Deutsch. Südpolar Exped., vol. 15, Zool. 7, 1914, p. 193 (N. 00° 46' W. 18° 59', 3000 meters; N. 5° 27' W. 21° 41, 500 meters; N. 17° 28' W. 29° 42''; 3000 meters).

Myctophum laternatum atlanticum TAANING, Vidensk. Medd. Dansk Naturh. Foren. Kjöbenhavn, vol. 86, 1928, p. 56. Just inside Strait of Gibralter.

Depth 3 4/5 to 4; head 3 to 3 1/3. width 2 2/5. Snout 5 to 5 4/5 in head; eye 3 1/8 to 3 2/5, greater than snout or interorbital; maxillary extends but little beyond eye and falls well short of vertical preopercle edge, expansion 2 4/5 in eye, length 1 3/5 to 2 1/8 in head; interorbital 4, low, convex. Gill rakers 4 or 5 + 12, lanceolate, much greater than gill filaments or 1 1/2 in eye.

Scales 32 or 33 in lateral.line. Scales very caducous, cycloid.

Antorbital luminous organ small or large, at upper front eye edge; 2 opercular photophores, upper little larger and on line with lower eye edge and upper subpectoral; 3 equidistant veiled branchiostegals; 5 pectorals, nearly equidistant; 1 suprapectoral, medway to little low in space between lateral line and pectoral fin origin, though little advanced from latter; 2 subpectorals, lower but slightly below upper little behind second pectoral or before suprapectoral, upper close before lowest pectoral ray bases; 4 ventrals, little arched, equidistant; 1 supraventral, little before first ventral or opposite ventral fin origin and about lowest 2/5 in space between ventral fin origin and lateral line; 5 to 7 + 2 or 3 anals, posteroanals behind anal fin base; 3 supraanals, first lowest or midway between last ventral and second supraanal, third on lateral line opposite first anal; 1 posterolateral above or little behind last anteroanal; 2 precaudals, low, together or posterior little higher. Male with large supracaudal luminous plate, female with smaller infracaudal.

D. IV, 8, I, first branched ray 1 1/4 to 1 2/5 in head; adipose fin 2 1/5 to 3; A. III, 13, first branched ray 2 1/8 to 2 1/4; caudal 1 to 1 1/4, well forked; least depth of caudal peduncle 2 1/2 to 3 1/8; pectoral 1 2/5 to 1 1/2; ventral 1 4/5 to 2 1/3.

Brown, darker along edges of body and some scale pockets. Iris gray, evidently white in life. Fins pale brown.

Atlantic, Indian, Antarctic and Pacific Oceans.

D. 5319. N. 21° 31' E. 117° 53' China Sea, vicinity of Formosa. In 40 fathoms. Novenber 5, 1908. Length 16 to 23 mm. 8 examples.

D. 5437. Hermana Mayer Light, N. 69° E., 4.9 miles (N. 15° 45' 54" E. 119° 42' 45"), west coast of Luzon. May 8, 1909. Length 12 to 16 mm. 3 examples.

D. 5227. Point Origon, S. 44° E., 18.30 miles (N. 12° 53' 45" E. 121° 52' 30"), east of Mindoro. In 322 fathoms. May 5, 1908. Length 17 to 24 mm. 5 examples.

D. 5120. Sombrero Island, S. 79° 30' E., 19.2 miles (N. 13° 45' 30" E. 120° 30' 15"), Balayan Bay and Verde Island Passage, In 393 fathoms. January 21, 1908. Length 13 mm.

47636 U. S. N. M. N. 23° 54' 46" W. 88° 58'. Blake Collection . Length 34 mm.

74668 U. S. N. M. Albatross Collection 4909. Length 15 mm. 2 examples.

75801 U. S. N. M. S. 2° 13' W. 89° 42'. Albatross Collection 4644. Length 18 to 25 mm. 4 examples.

Myctophum fibulatum Gilbert and Cramer

Myctophum fibulatum GILBERT and CRAMER, Proc. U. S. Nat. Mus., vol. 19, 1896, p. 411. N. Lat. 21° 13' W. Long. 157° 43' 37", in 310 fathoms. -- GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 596 (north of Molokai, Pailolo Channel, north of Maui, to 284 fathoms; Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 81 (discussion). -- JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, Dec. 1922, p. 11 (reference). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. (61) 67, text fig. 7 (Atlantic records); Proc. U. S. Nat. Mus., vol. 76, art. 10, 1929, p. 7 (type). -- NORMAN, Discovery Rep., vol. 2, 1930, 325 (S. 35° 01' E. 10° 18', 250 meters). -- FOWLER, Occas. Pap. Bishop Mus., vol. 9, No. 18, Feb. 1932, p. 4 (note).

Diaphus chrysorhynchus (not GILBERT and CRAMER) GILBERT AND CRAMER, Proc. U. S. Nat. Mus., vol. 19, 1896, pl. 38, fig. 2 (wrongly transposed on plate).

Myctophum (Myctophum) pterotum (not ALCOCK) BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 182, fig. 93 (part; 3 hawaiian examples). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, 1925, p. 242 (part).

Myctophum pterotum WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 86 (part). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 157 (part). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 70 (part; on GILBERT).

Myctophum hollandi JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 9, 1922, p. 11, pl. 1, fig. 2. Honolulu. -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 59 (reference).

Myctophum reinhardti (not LÜTKEN) FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 70 (part).

Myctophum simile TAANING, Vidensk. Medd. Dansk. Naturh. Foren. Kobenhavn, vol. 86, 1928, p. 56. North Atlantic.

Myctophum fibulatum proximum PARR, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 8. Tongue of the Ocean, Bahamas.

Benthosema pinchoti FOWLER, Proc. U. S. Nat. Mus., vol. 80 art. 6, 1932, p. 4, fig. 1. Nukuhiba, Marquesas Islands.

Depth 3 2/3 to 4 1/3; head 3 to 3 1/8, width 2 to 2 1/4. Snout 4 2/3 to 7 in head from snout tip; eye 2 3/5 to 3 1/8, greater than snout or interorbital; maxillary reaches well beyond eye though not quite to slightly inclined hind preopercle edge, expansion 2 7/8 to 3 in eye, length 1 1/2 to 1 3/4 in head from snout tip; interorbital 3 2/3 to 4, low, level. Gill rakers 7 or 8 + 17 or 18, lanceolate, slender, 1 2/5 to 2 in eye, subequal with gill filaments.

Scales 28 to 32 in lateral,line, not enlarged; 3 above, 3 or 4 below, 11 to 15? predorsal. Pointed axillary pectoral scale 1/3 fin length. Long pointed scale in ventral axil 4/5 of fin. Scales with 7 or 8 basal radiating striae; circuli fine, obsolete apically.

Small antorbital photophore little above middle of front eye edge; 2 opercular**s**, upper larger and level with lower eye edge and upper subpectoral, lower above upper end of maxillary expansion; 3 veiled bran**chio**stegals; equidistant or median little closer to posterior; 5 pectorals, last at ventral base and little elevated, also last interspace shortest; 1 suprapectoral, well before pectoral origin or third pectoral or opposite first subpectorals, also **c**lose below lateral line; 2 subpectorals, first or lower little lower than upper and behind second pectoral, upper close before lowest pectoral ray bases; 3 ventrals, equidistant or first close above second; 1 supraventral, about upper third to 2/5 in space below lateral line to ventral fin base, also slightly posterior from last pectoral; 5 or 6 + 4 or 5 anals, first posteroanal above last anal ray base; 3 supraanals, first opposite third (second in horizontal row) ventral and in horizontal line with second supraanal, which little to well behind last ventral and both little below midway in space below lateral line, third or uppermost close below on lateral line little before second anteroanal; 1 posterolateral, above and little behind last anteroanal; **2 wide set** precaudals, first low or close to lower tail edge, upper close below end of lateral line. Male with 3 or 4 luminous supracaudal plates.

D. III or IV, 9, I, first branched ray 1 1/2 to 1 3/4 in total head length; adipose fin 3 1/8 to 5; A. III, 15, I to III, 18, I, first branched ray 1 4/5 to 2 3/5; caudal 1 1/4 to 1 1/2, well forked; least depth of caudal peduncle 3 to 3 3/4; pectoral 1 1/10 to 1 1/2; ventral 2 1/8 to 2 1/4.

Brown, where scales have fallen pockets often dusky, also bases of vertical fins. Belly blackish. Scales with brilliant metallic luster, silvery. Fins all pale. Iris silvery white.

East Indies, Hawaiian Islands, Bahamas. Gilbert says a characteristic feature of the species are the 3 equally spaced pairs of ventral photophores along the median line.

Scopelus brachygnathos Bleeker, to judge from the incomplete figure and description, is surely closer to Daryscopelus pristilepis Gilbert and Cramer.

Myctophum hollandi Jordan and Jordan appears to me to be so close to the present species that I find only one feature of possible distinction and that is in the absence of the superimposed photophore (really the first pair of ventral photophores according to Gilbert) over the first ventral photophore. The incomplete figure 93 of Brauer, wrongly identified as Myctophum (Myctophum) pterotum, shows the arrangement of these photophores for Myctophum filbulatum most distinctly. Of these the anterior one is absent in Jordan and Jordan's figure of Myctophum hollandi, though in every other respect the arrangement of the other photophores in almost exactly as in Brauer's figure. Comparing Gilbert and Cramer's figure 2 of Diaphus chrysorhunchus (which wrongly transposed with their figure 3 called Myctophum fibulatum) it very easily be seen that Myctophum hollandi is similarly close. Another feature is the statement by Jordan and Jordan "Supraventral (VLO) wanting" though their fugure shows it clearly and located as in Brauer's figure. Further the position of the inclined plane of the 2 anterior supraanal photophores is in agreement with all the figures compared. Finally the descrepancy in the description of Myctophum hollandi as already pointed out, may it not be that the scale containing the first or anterior supraanal photophore may have been lost?

Another minor point of difference for Myctophum hollandi is the anterior position of the median branchiostegal photophore, though as I have found this variable in other species of the genus conclude it may also be a variant here. Myctophum hollandi is said to have D. I, 12 though the figure shows III, 10, I; the A. given as I, 17 is figured III, 16, I. A Still further resemblance of Myctophum hollandi with Myctophum fibulatum is the elevated upper opercular photophore nearly level with the lower edge of the eye and the upper subpectoral, though not well shown in Parr's figure of Myctophum fibulatum.

Benthosema pinchoti seems to be an aberrant example of the present species, differing only slightly in the suprapectoral photophore placed on the beginning of the lateral line, 4 posteroanals and 21 lower gill rakers.

D. 5530. Balicasag Island(C.), N. 32° E., 4.3 miles (N. 9° 26' 45" E. 123° 38' 30"), between Sigquijor and Bohol Islands. August 11, 1909. Length 24 mm.

D. 5604. Bilatu (town), N. 26° W., 8.7 miles (N. 0° 22' 30" E. 122° 42' 30"). Gulf of Tomini, Celebes. November 15, 1909. Length 19 mm. 5 examples.

D. 5365. Cape Santiago Light, N. 73° W., 6.7 miles (N. 13° 44' 24" E. 120° 45' 30"), Balayan Bay, Luzon. In 214 fathoms. February 22, 1909. Length 88 mm.

D. 5320. China Sea vicinity of Formosa (N. 20° 58' E. 120° 03'). In 1804 fathoms. November 6, 1908. Length 17 mm.

D. 5564. Dammi Island (N.), S. 85° W., 6.1 miles (N. 5° 50' 00" E. 120° 31' 00"), between Jolo and Tawi Tawi. In 236 fathoms. September 21, 1909. Length 65 to 71 mm. 3 examples.

D. 5176. Escarceo Light, S. 57° E., 7 miles (N. 13° 35' 15" E. 120° 53' 20"), Verde Island Passage. In 260 fathoms. March 24, 1908. Length 37 to 60 mm. 8 examples.

D. 5291. Escarceo Light, N. 39° W., 2.20 miles (N. 13° 29' 40E. 121° 00' 45"), China Sea, vicinity southern Luzon. In 173 fathoms. July 23, 1908. Length 70 to 77 mm. 2 examples.

D. 5293. Escarceo Light, N. 59° W., 6 miles (N. 13° 28' 15" E. 121° 04' 30"), China Sea, vicinity southern Luzon. In 180 fathoms. July 23, 1908. Length 58 mm.

D. 5230. Limasana Island (S.), S. 68° E., 22.50 miles (N. 10° 01' 50" E. 124° 42' 30"), between Bohol and Leyte. In 118 fathoms. May 7, 1908. Length 50 mm.

D. 5224. Malabrigo Light, N. 79° W., 6.25 miles (N. 13° 34' 50" E. 121° 21' 45"), between Marinduque and Luzon. April 24, 1908. Length 13 to 16 mm. 4 examples.

D. 5280. Malavatuan Island(N.), S. 60° W., 6.10 miles (N. 13° 55' 20" E. 120° 25' 55"), China Sea vicinity southern Luzon. In 193 fathoms. July 17, 1908. Length 65 to 80 mm. 17 examples.

D. 5267. Matocot Point, S. 39° E., 5.50 miles (N. 13° 42' 20" E. 120° 58' 25"), Verde Island Passage and Batangas Bay. In 170 fathoms. June 8, 1908. Length 48 mm.

D. 5268. Matocot Point, S. 50° E., 5.80 miles (N. 13° 42' E. 120° 57' 15"). In 170 fathoms. June 8, 1908. Length 57 to 67 mm. 4 examples.

D. 5297. Matocot Point, S. 50° E., 5.10 miles (N. 13° 41' 20" E. 120° 58'), China Sea vicinity southern Luzon. In 198 fathoms. July 24, 1908. Length 55 to 67 mm. 2 examples.

D. 5649. North Island (S.), N. 87° E., 22 miles (S. 5° 36' 00" E. 122° 07' 36"), Buton Strait. December 15, 1909. Length 15 to 37 mm. 28 examples.

D. 5228. Romblon Light, N. 3° E., 6.25 miles (N. 12° 29' 30" E. 122° 15' 45"), south of Romblon. May 5, 1908. Length 15 to 22 mm. 26 examples.

D. 5579. Sibutu Island peak, S. 77° E. 20.3 miles (N. 4° 54' 15" E. 119° 09' 52"), vicinity Darvel Bay, Borneo. In 175 fathoms. September 25, 1909. Length 49 to 65 mm. 3 examples.

D. 5580. Sibutu Island peak, S. 82° E., 23.2 miles (N. 4° 52' 45" E. 119° 06' 45"). In 162 fathoms. September 25, 1909. Length 45 to 59 mm. 4 examples.

3 examples. Varadero Bay, Mindoro. July 23, 1908. Electric light 12.30 to 1.45 A. M. Length 77 to 83 mm. 4 examples. Varadero Harbor. July 22, 1908. Electric light 11.33 P. M. to 12.30 A. M. Length 75 to 85 mm.

47711 U. S. N. M. Albatross Collection 3467. Length 101 mm. Type. Though most of squamation gone an excellent specimen.

89714 U. S. N. M. N. 24° 29' W. 77° 29'. Bingham Oceanographic Collection. March 14, 1927. Length 25 mm. Paratype of Myctophum fibulatum proximum.

Myctophum cocco (Cocco)

Scopellus cocco COCCO, Giorn. Sci. Sicilia, vol. 26, 1829, p. 77. Sicily; Isis, vol. 24, 1831, p. 1341 (Messina).

Scopelus cocco BONAPARTE, Iconog. Fauna Italica, Pesc., vol. 3, pt. 1, fasc. 27. 1840, description, pl., fig. 6 (Sicily).

Scopelus coccoi GUNTHER, Cat. Fish. Brit. Mus., vol. 5, 1864, p. 413 (Atlantic materials; types of Myctophum hians and Alysia coruscans); Fishes of Zanzibar, 1866, p. 116 (east coast of Africa). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 5, 1874, p. 35 (Pacific Ocean). -- CANESTRINI, Fauna Italia, Pesc., 1874, p. 123 (Sicily). -- SCHMELTZ, Cat. Mus. Godeffroy,,No. 6, 1877, p. 17 (Pacific Ocean). -- GUNTHER, Rep. Voy. Challenger, vol. 31, pt. 2, 1889, p. 30 (south Atlantic; south Pacific; mid Pacific; near Admiralty Islands; passage to Japan). -- COLLETT, Res. Camp. Sci. Monoaco, vol. 10, 1896, p. 116 (west of Azores; south of Flores). -- GILCHRIST, Marine Investigat. South Africa, vol. 4, 1908, p. 165 ( ). -- THOMPSON, Marine Biol. Rep. South Africa, No. 3, 1916, p. 83 ( ).

Scopelus (Rhinoscopelus) coccoi LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 2, vol. 7, 1892, p. 242, fig. 2 (Atlantic materials; Zanzibar; Timor; Bay of Bengal; north of Australia; east coast Australia; south part Pacific; off Carolines).

Rhinoscopelus coccoi GOODE and BEAN, Oceanic Ichth., 1895, p. 90, pl. 28, fig. 104 (Atlantic materials).

-- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 568 (compiled),

Rhinoscopelus cocco FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 570 (Atlantic materials); Mem. Bishop Mus., vol. 10, 1928, p. 70, fig. 14 (young).

Myctophum coccoi BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 390 (diagnosis in key). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 158, fig. 61 (compiled). -- REGAN, Fishes Brit. Antarctic "Terra Nova" Exped., Nat. Hist. Rep., Zool., vol. 1, No. 4, 1916, p. 139 (off Three Kings Islands, in 3 meters). -- TAANING, Rep. Danish Oeanogr. Exped. Mediterranean, No. 5, 1918, p. 67, figs. 23, 24 (Mediterranean; Atlantic); Vidensk. Medd. Dansk Naturh. Foren., Kjøbenhavn, vol. 86, 1928, p. 55 (diagnosis in key). -- PARR, Bull. Bingha m Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 61 (note). -- NORMAN, Discovery Rep., vol. 2, 1930, p. 325 (S. 33° 53' 45" E. 90 26' 30", 1000 meters; S.37o 20' W. 12o 47' 30", 100 to 115 meters).

Alysia loricata LOWE, Proc. Zool. Soc. London, 1839, p. 87. Madeira.

Myctophum coruscans RICHARDSON, Ichth. Voy. Erebus and Terror, 1844-48, p. 40, pl. 27, figs. 1-5. Between St. Helena and Ascension Island; between Australia and New Zealand. -- GOODE and BEAN, Oceanic Ichth., 1895, p. 89 (reference).

Scopelus coruscans HUTTON, Trans. New Zealand Inst., vol. 5, 1872, (1873), p. 270 (compiled). -- MACLEAY, Proc, Linn. Soc. New South Wales, vol. 6, 1881, p. 224 (copied).

Rhinoscopelus coruscans WAITE, Records Canterbury Mus., vol. 1, No. 1, April 25, 1907, p. 13 (reference).

Myctophum hians RICHARDSON, Ichth. Voy. Erebus and Terror, 1844-48, p. 41, pl. 27, figs. 19-21. No locality.

Myctophum (Myctophum) hians BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 194, text fig. 112 (south of Cape Colony, S. Lat. 37° 31' 2" E. Long. 17° 1' 6"). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 244 (compiled).

Scopelus gracilis LUTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjøbenhavn, ser. 2, vol. 7, 1892, p. 255, fig. 13. North of Cape Verde Islands; mid Atlantic; South of Madagascar, S. Lat. 35° 36' E. Long. 27° 40'.

Myctophum gracile GOODE and BEAN, Oceanic Ichth., 1895, p. 74 (compiled).

Myctophum tenuiculum GARMAN, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 262, pl. J., fig. 5. San Mariato Point, in 100 fathoms (Gulf of Panama).

Rhinoscopelus tenuiculus GILBERT, Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 222 (N. Lat. 10° 57' 35" W. Long. 137° 35' 25"); Bull. Amer. Mus. Nat. Hist. New York, vol. 30, art. 2, March 10, 1911, p. 15 (midway between Galapagos and Marquesas Islands). -- JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, Dec. 1922, p. 11 (reference). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 71 (compiled).

Depth 4 1/4 to 5; head 3 3/4 to 4 1/8; width 2 1/2 to 3 1/5. Snout 4 1/5 to 5 1/4 in head; eye 3 1/4 to 3 3/4, greater than snout, subequal with interorbital; maxillary reaches well behond eye, not quite reaching slightly inclined hind preopercle edge, slender, length 1 1/4 to 1 3/5 in head; interorbital 2 3/4 to 3 1/2 in head, well convex. Gill rakers 3 to 6 + 7 to 10, slender, lanceolate, 1 to 1 1/4 in eye, subequal with gill filaments.

Scales 37 to 40 in lateral line, enlarged, with distinct tubes; 2 or 3 above, 3 or 4 below, 17 or 18 predorsal. Anterior bases of dorsal and anal, also caudal base, scaly. Apparently no enlarged or pointed scale in ventral axil. Scales with 4 or 5 basal radiating striae; circuli fine, obsolete apically.

Two small antorbital photophores, upper at upper front eye edge well above pupil and lower well below lower pupil edge; 2 opercular**s**, upper larger, lower often **veiled**; 3 veiled equidistant branchiostegals; 5 pectorals, equidistant; 1 suprapectoral, close before and above pectoral origin; 2 subpectorals, lower or first nearly midway between upper and second pectoral and opposite and little before suprapectoral, upper at bases of lowest pectoral rays; 4 ventrals; 1 supraventral, little lower than upper subpectoral or slightly before first ventral; 5 or 6 + 10 to 14 anals; 3 supraanals, first or lowest level with supraventral and little behind second or before third ventral, second little higher than first or before or opposite last ventral and uppermost close below lateral line little before to opposite anal origin; 1 posterolateral, close below lateral line and little behind last anteroanal; 2 or 3 precaudals, close together along lower edge of tail. Males with 6 to 8 supracaudal luminous plates, female with 4 to 6 **infracaudals.**

D. III, 8, I, first branched ray 1 1/2 to 2 in head; adipose fin 2 2/5 to 3 1/3; A. III, 16, I to III, 19, I, first branched ray 1 2/3 to 2 1/10; caudal 1 1/3 to 1 2/5, deeply forked; least depth of caudal peduncle 5 to 7; pectoral 1 3/5 to 1 2/3; ventral 1 4/5 to 2 1/2.

Largely dark brown, paler below. Sides of head and trunk silvery, all with metallic or iridescent luster. Iris pale, silvery. Photophores usually all pearly, with dusky or blackish edges. Fins pale brown to whitish, caudal largely dusky basally.

Atlantic, Indian and Pacific Oceans. One of the best known species, distinguished by its tapering body and long slender caudal peduncle, firmly iridescent scales, the dorsal fin well advanced and the snout strongly protruded. Brauer gives the anal photophores 4 to 8 + 9 to 14. According to Taaning the vertebrae 40 or 41.

38191 U. S. N. M. N. 36° W. 74°
Albatross Station 2131. Length 24 to 50 mm. 160 examples.
43810 U. S. N. M. Albatross Collection 2584. Length 31 mm. 2 examples.
43812 U. S. N. M. Albatross Collection 2566. Length 29 to 40 mm. 2 examples.
43813 U. S. N. M. Albatross Collection 2571. Length 31 to 47 mm. 5 examples.
43814 U. S. N. M. Albatross Collection 2569. Length 42 to 48 mm. 2 examples.
43815 U. S. N. M. Albatross Collection 2566. Length 22 to 46 mm. 4 examples.
43817 U. S. N. M. Albatross Collection 2381. Length 36 to 44 mm. 2 examples.
43818 U. S. N. M. N. 40° 24' 18" W. 66° 09' 00".
Albatross Collection 2573. Length 38 mm.
43819 U. S. N. M. N. 42° 20' W. 65° 7' 30". Albatross Station 2522. Length 43 mm.
43820 U. S. N. M. N. 39° W. 72°
Albatross Collection . Length 22 to 46 mm. 62 examples.

43820 U. S. N. M. N. 39° W. 72°
Albatross Collection . Length 39 to 42 mm. 2 examples.

43821 U. S. N. M. Albatross Collection . Length 24 to 46 mm. 21 examples.

43822 U. S. N. M. N. 39° W. 72°
Albatross Collection . Length 23 to 45 mm. 12 examples.

43823 U. S. N. M. Albatross Collection 2727. Length 30 to 51 mm. 44 examples.

74329 U. S. N. M. Albatross Collection 2682. Length 28 to 43 mm. 21 examples.

76526 U. S. N. M. N. 38° 20' W. 70° 08' 30".
Albatross Collection 2713. Length 26 to 30 mm. 2 examples.

A. N. S. P. No locality. Obtained by U. S. S. Constitution. August 22, 1884, Dr. W. H. Jones. Length 38 mm.

to A. N. S. P. N. 39° 50' 45".W. 71° 43', at surface. September 18, 1885. U. S. Bur. Fisheries 2583. Length to mm.

to A. N. S. P. Between Norfolk, Virginia, and Cape Verde Islands and Montevideo, Uruguay. At surface. 1891-1892. Dr. W. H. Rush. Length to mm.

to A. N. S. P. S. 20° W. 75°. Dr. B. Sharp. Length to mm.

Myctophum nigroocellatum (Günther)

Scopelus nigro-ocellatus GÜNTHER, Journ. Mus. Godeffroy, vol. 4, 1873, p. 91. South Atlantic; Rep. Voy. Challenger, vol. 31, pt. 2, 1889, p. 30 (type; Admiralty Islands to Japan). -- LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, No. 6, 1892, p. 246 (reference).

Myctophum nigro-ocellatum TAANING, Vidensk. Medd. Dansk Naturh Foren., Copenhagen, vol. 86, 1928, p. 55 (North Atlantic, diagnosis in key). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 62 (compiled); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 9 (compiled). -- mNORMAN, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 514 (Zanzibar; north of Admiralty Island; Volcano Island; type of Scopelus indicus). -- FOWLER, Occas. Pap. Bishop Mus., vol. 9, No. 18, Feb. 1932, p. 4 (reference).

Scopelus indicus DAY, Fishes of India, pt. 3, 1877, p. 507, pl. 118, fig. 2. Vizagapatam.

Scopelus coccoi (not COCCO) GÜNTHER, Rep. Voy. Challenger, vol. 31, pt. 2, 1889, p. 30 (near Admiralty Islands; part).

Myctophum coruscans (not RICHARDSON) FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1899, p. 498 (Hawaiian specimen).

Rhinoscopelus oceanicus (part) JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 168 (copied).

Centrobranchus choerocephalus FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1903, p. 754. Hawaiian Islands. -- GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 594, pl. 69, fig. 1 (south of Oahu, off Nuhau, French Frigates Shoal, Laysan; east of Kauai; between Honolulu and San Francisco). -- GILBERT, Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 224 (S. Lat. 16° 39' W. Long. 149° 11'). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 570 (types); Copeia, No. 112, Nov. 20, 1922, p. 82 (Hawaii). -- JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, Dec. 1922, p. 12 (reference). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 67 (types; Hawaii).

Myctophum (Myctophum) choerocephalum BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 202, fig. 121 (Atlantic, Indian, Pacific Oceans).

Myctophum coccoi forma regularis BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 390 (diagnosis in key).

Depth 4 2/5 to 5; head 3 2/5 to 3 7/8, width 2 1/3 to 2 1/2, Snout 4 1/2 in head; eye 3 1/2 to 3 2/3, subequal with prominent snout or interorbital; maxillary reaches well beyond eye though not quite to inclined hind preopercle edge, wlender, length 1 2/5 to 1 3/4; interorbital 3 2/5 to 3 1/2, convex. Gill rakers 3 + 5, clusters of small prickles; gill filaments short.

Scales 35 to 39 in median lateral series, without tubes; 6 to 8 series transversely. Bases of dorsal and anal anteriorly, also caudal base, scaly. Scales mostly entire, cycloid.

One or 2 minute antorbital photophores, upper at upper front eye edge and lower rather low; 2 operculars, upper above end of maxillary, lower veiled; 3 veiled equidistant branchiostegals; 5 pectorals, equidistant; 1 suprapectoral, close before or at pectoral origin; 2 subpectorals, lower little before suprapectoral or little behind second pectoral or about midway between latter and upper subpectoral, which close below lowest pectoral ray bases; 4 ventrals, equidistant; 1 supraventral, level with upper subpectoral and little before first ventral photophore; 4 to 7 + 8 to 12 anals; 3 supraanals , usually in inclined line, first opposite or little before third ventral spot, second little above first to which nearer than to thrd and little before or behind fourth ventral and at lower third to 2/5 in body depth little before first anteroanal; 1 posterolateral, little lower than uppermost supraanal and over fifth or sixth anteroanal; 2 precaudals, close set, posterior but little higher. Six large luminous supracaudal scales.

D. II or III, 8, I, first branched ray 1 3/4 to 2 in head; adipose fin 2 2/5 to 2 7/8; A. III, 15, I, first branched ray 2 1/8 to 2 1/5; caudal well emarginate; least depth of caudal peduncle 4 7/8 to 5; pectoral 1 7/8 to 2; ventral 2 1/3 to 2 1/2.

Deep dusky, with iridescent purplish, bluish and silbery reflections. Iris dull dark yellowish. Fins plain pale brown. Photophores black, with bright silvery centers. Supracaudals with dull yellowish.

Atlantic, Indian and Pacific Oceans.

51552 U. S. N. M. Albatross Collection 3932. Length 24 to 29 mm. 5 examples.

51553 U. S. N. M. Albatross Collection 3912. Length 28 to 36 mm. 3 examples.

51554 U. S. N. M. Albatross Collection 3980. Length 39 mm.

51555 U. S. N. M. Albatross Collection 3930. Length 19 to 32 mm. 2 examples.

51556 U. S. N. M. Albatross Collection 3929. Length 21 mm.

51574 U. S. N. M. Albatross Collection 3926. Length 20 to 40 mm. 7 examples. Two with 6 supracaudal spots.

51575 U. S. N. M. Albatross Collection . Length 23 mm.

51577 U. S. N. M. Albatross Collection 3980. Length 20 to 32 mm. 13 examples.

51579 U. S. N. M. Albatross Collection 4009. Length 23 mm.

74625 U. S. N. M. Albatross Collection 4921. Length 17 mm.

75803 U. S. N. M. N. 22° 10' W. 155° 35' 45". Albatross Collection 3808. Length 34 mm.

7972 A. N. S. P. Near the Hawaiian Islands. Dr. W. H. Jones. Length 46 mm. Type of Centrobranchus choerocephalus.

and A. N. S. P. Near the Hawaiian Islands. Dr. W. H. Jones. Length to mm. Paratypes of Centrobranchus choerocephalus.

Myctophum andreae (Lütken)

Scopelus (Rhinoscopelus) andreae LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, No. 6, 1892, p. 245, fig. 3. Atlantic and Indian Oceans; Vidensk. Medd. Naturh. Foren. Kobenhavn, 1891, p. 209 (Jocobshavn).

Rhinoscopelus andreae GOODE and BEAN, Oceanic Ichth., p. 90 ("not uncommon in the collection of the National Museum, mingled with specimens identified by us the S. Coccoi. It occurs in almost every lot, and therefore a new list of localities is not given").

-- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 569 (copied).

Myctophum coccoi andreae BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 390 (diag. in key).

Myctophum (Myctophum) andreae BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 203, text fig. 122 (trunk) (Atlantic Ocean; Bay of Bengal; west coast of Sumatra; south of Ceylon). -- ZUGMAYER, Res. Camp. Sci. Monaco, vol. 35, 1911, p. 28 (N. 41° 40' E. 4°, 2025 meters).

Myctophum andreae PARR, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 8 (type of Centrobranchus gracillicauda). -- FOWLER, Occas. Pap. Bishop Mus., vol. 9, No. 18, Feb. 1932, p. 4 (corrected reference).

Centrobranchus andreae GILBERT, Bull. Amer. Mus. Nat. Hist. New York, vol. 30, art. 2, 1911, p.

Centrobranchus andrae FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 67 (Hawaiian Islands; error).

Centrobranchus gracilicaudus GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 595, pl. 69, fig. 2. West of Nuhau; west of Oahu; southwest of French Frigate Shoals; near Laysan. -- JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, 1922, p. 12 (reference).

Myctophum nigro-ocellatum (not GÜNTHER) TAANING, Vidensk Medd. Dansk. Naturh. Foren. Kobenhavn, vol. 86, 1928, p. 55 (part). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 62 (part; compiled).

Depth 4 1/5 to 4 3/5; head 3 1/4 to 3 2/3, width 2 1/4 to 3. Snout 4 to 4 1/4 in head; eye 3 3/4 to 4, greater to subequal with snout, greater than interorbital in young to subequal with age; maxillary not quite reaching well inclined hind preopercle edge, slender, length from snout tip 1 1/3 to 1 2/5 in head; interorbital 3 1/8 to 3 1/5, well convex. Gill rakers 3 - 4, short finely roughened spiny tubercles, greatly shorter than gill filaments, which 1 1/2 in eye.

Scales 33 to 37 in lateral line to caudal base, greatly enlarged and narrowly imbricated; 3 above, 3 below, 13 to 15 predorsal. Front of dorsal and anal bases, also caudal base, scaly. Scales with 3 basal radiating striae; circuli coarse basally, obsolete apically.

Antorbital photophores small, as upper well elevated at front eye edge and lower low at lower front eye edge; 2 operculars, lower often verled or indistinct; 3 equidistant veiled branchiostegals; 5 pectorals, second interspace usually longest; 1 suprapectoral close above origin of pectoral fin; 2 subpectorals, front or lower before suprapectoral though little behind second pectoral, upper close below, lowest pectoral fin rays; 4 ventrals, equidistant; 1 supraventral about same level as upper subpectoral; 6 or 7 - 9 to 11 anals, usually most of posteroanals behind anal fin base; 3 supraanals, first or lowest over last ventral, second little higher and posterior and third slightly above middle of body or lateral line and anal fin origin; 1 posterolateral over last anteroanal slightly below middle in space below lateral line; 2 precaudals, close set, low.

D. III, 8, I, first branched ray 1 1/2 to 1 3/4 in head; adipose fin 2 to 2 3/5; A. III, 15, I, first branched ray 1 3/4 to 2 1/4; caudal 1 1/5 to 1 1/4, forked; least depth of caudal peduncle 4 1/2 to 4 4/5; pectoral 2; ventral 2 2/5 to 2 3/4.

Back dark brown, sides and below paler with silvery white tinge and iridescent reflections. Iris white. Fins all pale.

Atlantic, Indian and Pacific Oceans.

D. 5186. Lusaran Light, N. 20° E., 37.80 miles (N. 9° 53' 30" E. 122° 15' 30"), between Panay and Negros. March 30, 1908. Length 19 to 44 mm. 8 examples.

D. 5128. Nogas Island (W.), N. 6° E., 32.50 miles (N. 9° 52' 10" E. 121° 49' 35"), Sulu Sea, vicinity southern Panay. February 4, 1908. Length 20 to 29 mm. 3 examples.

51518 U. S. N. M. Albatross Collection 4145. Length 19 to 33 mm. Types of Centrobranchus gracilicaudus.

51572 U. S. N. M. Albatross Collection . Length 17 mm.

51573 U. S. N. M. Albatross Collection . Length 28 mm.

51576 U. S. N. M. Albatross Collection . Length 28 mm.

Myctophum orientalis (Gilbert)

Dasyscopelus orientalis GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, August 1913, p. 70, pl. 11, fig. 1. Misaki, Sagami Bay, Japan. -- JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, No. 4, 1914, p. 213 (type).

Myctophum orientalis PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 62 (note).

Depth 3 1/2 to 3 2/3; head 3 1/8 to 3 1/4, width 2 1/5 to 2 1/2. Snout 5 1/4 to 6 1/2 in head from snout tip; eye 2 4/5 to 3, greater than snout or interorbital; maxillary extends but little behind eye though not quite to vertical hind preopercle edge, slender, length 1 1/2 to 1 3/5 in head from snout tip; interorbital 3 2/5 to 3 1/2, slightly convex. Gill rakers 4 - 14 or 15, lanceolate, subequal with gill filaments or about 1/2 of eye.

Scales 32 or 33 in lateral line, not enlarged, tubes distinct; 3 above, 4 below, 10 or 11 predorsal to occiput. Caudal scaly basally. Bases of dorsal and anal with scales anteriorly. Scales with 4 basal radiating striae; circuli rather coarse, somewhat obsolete apically.

One lower antorbital photophore, small, close along front eye edge; 2 operculars, upper larger, well above maxillary end and in inclined line with lower eye edge and lower subpectoral; 3 equidistant veiled branchiostegals; 5 pectorals, third interspace shortest and first and second subequally longest; 1 suprapectoral, close above and before pectoral origin; 2 subpectorals, first or lower over second pectoral photophore and slightly nearer upper subpectoral than first pectoral, also little before supraventral; upper subpectoral close before lower pectoral fin ray bases; 4 bentrals, equidistant; 1 supraventral, midway between lateral line and ventral fin base; 6 to 8 - 2 to 4 anals, first posteroanal above last anal ray base; 3 supraanals, often nearly or quite in inclined line from last ventral, equidistant or 2 lower little closer and uppermost close below lateral line; 1 posterolateral, above or close behind last anteroanal, also close below lateral line; 2 precaudals, close set, low, posterior slightly higher. No supracaudal or infracaudal luminous scales.

D. III, 8, I, first branched ray 1 1/8 to 1 1/4 in total head length; adipose fin 3 2/5 to 3 1/2; A. III, 14 or 15, first branched ray 2; caudal subequal with head, well forked; least depth of caudal peduncle 3; pectoral 1 1/4; ventral 1 7/8 to 2.

Brown to dusky where scales have fallen. Scales, sides of head and iris with silvery white reflections, also iridescent. Fins whitish.

Japan. Though Gilbert espressly mentions there are no luminous areas on the upper or lower surfaces of the caudal peduncle in any of the numerous adults of the collection, his figure shows a pale border both above and below along the edges of the caudal peduncle.

74670 U. S. N. M. Albatross Collection 4954. Length 25 mm.

74671 U. S. N. M. Albatross Collection 4955. Length 17 to 26 mm. 5 examples.

74672 U. S. N. M. Albatross Collection 4921. Length 17 to 25 mm. 17 examples.

Myctophum pristilepis (Gilbert and Cramer)

Dasyscopelus pristilepis GILBERT and CRAMER, Proc. U. S. Nat. Mus., vol. 19, 1896, p. 412, pl. 39, fig. 1. N. Lat. 21° 15' 49" W. Long. 157° 44' 27", off Hawaiian Islands. -- GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 600 (Honolulu; south of Lanai; north of Molokai; west of Oahu; south of Bird Island; south of French Frigates Shoal; near Laysan; east of Kauai; west of Kauai); Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 220 (N. Lat. 1° 45' W. Long. 137° 36'; S. Lat. 16° 39' W. Long. 149° 11'). -- JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, 1922, p. 10 (reference).

Myctophum pristilepis BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 163 (diagnosis in key). -- GILBERT, Bull. Mus. Comp. Zool., vol. 46, No. 14, April 1906, p. 259, pl. 3 (Mauritius; Hawaii). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 88 (Maccassar Strait, Halmahera and Banda Sea, Kur Island, to 1000 meters).-- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 165, fig. 64 (WEBER'S materials). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 62 (note); Proc. U. S. Nat. Mus., vol. 76, art. 10, 1929, p. 9 (type). -- FOWLER, Occas. Pap. Bishop Mus., vol. 9, No. 18, Feb. 1932, p. 4 (reference).

?Scopelus brachygnathos BLEEKER, Act. Soc. Sci. Ind. Neerland., No. 3, vol. 1, 1856, p. (6), 65. Manado, Celebes; Nat. Tijds. Nederland Indië, vol. 13, 1857, p. 385 (Batjan); vol. 17, 1858-59, p. 143 (Boleling, Bali).

Myctophum brachygnathus BLEEKER, Atlas Ichth. Ind. Neerland., vol. 6, 1866-72, pl. (1) 277, fig. 3.

Myctophum (Dasyscopelus) asperum (not RICHARDSON) BLEEKER, Atlas Ichth. Ind. Neerland., vol. 6, 1866-72, p. 159 (Bali, Celebes, Batjan).

Dasyscopelus asper FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 67 (part).

?Myctophum pristilepis obtusirostre TAANING, Vidensk. Medd. Dansk. Naturh. Foren. Kjobenhavn, vol. 86, 1928, p. 54. North Atlantic.

Depth 4 to 4 1/4; head 3 1/3 to 3 2/3, width 2. Snout 5 1/2 to 6 1/3 in head from snout tip; eye 2 1/5 to 2 2/5, greater than snout or interorbital; maxillary extends little beyond eye though not quite to vertical preopercle edge, expansion 3 1/5 to 3 1/4 in eye, length 1 1/2 to 1 3/5 in head from snout tip; interorbital 3 to 3 1/2, nearly flat. Gill rakers 8 + 19 to 22, lanceolate, 1 3/5 in eye, twice gill filaments.

Scales 36 or 37 in lateral line, scales enlarged; 3 above, 3 below, 12 or 13 predorsal to occiput. Large scales on cheek and opercle. All fins more or less scaly. Ventral axil with large pointed scale. Scales ctenoid, firm, not spiniferous in lateral line. Scales with 3 to 5 basal radiating striae; circuli fine, obsolete apically.

Antorbital photophore small, ventral on front eye edge; 2 operculars, upper little larger, on line with lower eye edge and lower subpectoral photophore; 3 equidistant veiled branchiostegals; 5 pectorals, second and third closest; 1 suprapectoral, little above and before pectoral origin, much nearer latter than lateral line; 2 subpectorals, lower in line with suprapectoral and second ventral though much nearer latter than upper subpectoral, which close before bases of lowest pectoral rays; 4 ventrals, equidistant; 1 supraventral, midway to slightly lower in space between lateral line and ventral fin base; 8 to 10 + 3 to 5 anals; 3 supraanals, in slightly curved line with first or lowest little before fourth ventral, also closer to latter than to second supraanal, which midway nearly between first supraanal and third or uppermost supraanal, which close below lateral line and opposite anal fin origin; 1 posterolateral above last anteroanal, close below lateral line; 2 close set precaudals, second slightly raised. Infracaudal luminous scales 3.

D. III, 9 to III, 11, first branched ray 1 2/5 to 1 3/5 in head; adipose fin 3 2/5 to 3 3/4; A. III, 14 to III, 16, first branched ray about 2?; caudall well forked; least depth of caudal peduncle 3 1/4 to 3 1/2; pectoral 1 1/4 to 1 2/5; ventral 2 1/8 to 2 1/4.

Brownish, upper surfaces where scales have fallen darker. Sides of head and body silvery, with bright iridescent reflections, especially on scales. Snout pale or whitish. Fins all pale brown.

Indian and Pacific Oceans. A species greatly like Myctophum spinosum in some respects, especially its well scaled fins. The front of the dorsal and anal, as well as the caudal, largely covered with large scales, a fact not shown in Gilbert's figure or mentioned in his description. This is doubtless due to the condition of his specimens, as in most preserved materials they have disappeared. He states of the scales "their edges strangely toothed, the teeth entirely absent or obsolescent on the scales of the lateral line". This must, however, be a variable character, as I find the scales of the lateral line with 6 to 10 strong marginal denticles. Other specimens are entirely with smooth edged scales.

There is truly little in Bleeker's description of Scopelus brachygnathos to identify it with the present species, though he gives D. II, 10 or II, 11, A. II, 16 or II, 17; depth 5 1/3 in total and head 4 1/2. This description is based on 2 examples 50 and 65 mm. The photophores are not described though apparently inaccurately represented in his subsequent colored plate as there are 3 precaudals, anals 9 + 4, apparently the 3 supraanals are intended with the first opposite anal origin, second midway between first anal and lateral line and uppermost opposite second anal and close below lateral line; 2 ventrals ? are shown on the same level as the anals; 1 supraventral little nearer ventral than lateral line; 2 subpectorals as usual; no suprapectoral or no posterolateral. The scales in the lateral line are but little larger than the others.

Indian and Pacific Oceans. The Atlantic form separated by Taaning as Myctophum pristilepis obtusirostre.

D. 5539. Apo Island (C.), N. 78°W., 8.2 miles (N. 9°3'20" W. 123°24'45"), between Negros and Siquijor. August 19, 1909. Length 19 mm.

D. 5196. Capitancillo Light, N. 5°30" W., 14.30 miles (N. 10°44'30" E. 124°7'30"), off northern Cebu. April 3, 1908. Length 18 to 50 mm. 10 examples.

D. 5230. Limasaua (S.), S. 68°E., 22.50 miles (N. 10°1'50" E. 124°42'30"), between Bohol and Leyte. In 118 fathoms. May 7, 1908. Length 15 to 23 mm. 4 examples.

D. 5186. Lusaran Light, N. 20°E., 37.80 miles (N. 9°53'30" E. 122°15'30"), between Panay and Negros. March 30, 1908. Length 29 to 83? mm. 2 examples.

D. 5422. Lusaran Point Light, S. 80°E., 9.7 miles (N. 10°31' E., 122°18'45"), between Panay and Guimaras. March 30, 1909. Length 19 mm.

D. 5649. North Island (S.), N. 87°E., 22 miles (S. 5°36' E. 122°7'36"), Buton Strait. December 16, 1909. Length 44 to 47 mm. 3 examples.

D. 5227. Point Origon, S. 44° E., 18.30 miles (N. 12°53'45" E. 121°52'30"), east of Mindoro. In 322 fathoms. May 5, 1908. Length 29 to 49 mm. 2 examples.

47737 U. S. N. M. Albatross Collection . Length 62 mm. Type of Dasyscopelus pristilepis. Large lernean parasite on back close before front and on right side.

51519 U. S. N. M. Honolulu market. Albatross Collection . Length 77 mm.

51557 U. S. N. M. Albatross Collection 4145. Length 15 to 19 mm. 13 examples.

51558 U. S. N. M. Albatross Collection 4010. Length 15 to 19 mm.
6 examples.

51559 U. S. N. M. Albatross Collection 3980. Length 19 to 38 mm.
5 examples.

51560 U. S. N. M. Albatross Collection 3878. Length 20 mm. 2 examples.

51561 U. S. N. M. Albatross Collection 2732. Length 27 to 31 mm.
2 examples.

51562 U. S. N. M. Albatross Collection 3912. Length 25 to 31 mm.
2 examples.

51563 U. S. N. M. Albatross Collection . Length 16 to 19 mm.
7 examples.

51564 U. S. N. M. Albatross Collection 3889. Length 20 mm.

51565 U. S. N. M. Albatross Collection 3926. Length 16 to 23 mm.
5 examples.

75774 U. S. N. M. N. 1°45' W. 37°36'. September 9, 1899. Albatross Collection. Length 17 mm.

Myctophum asperum Richardson

Myctophum asperum RICHARDSON, Ichth. Voy. Erebus and Terror, 1844-48, p. 41, pl. 27, figs. 13-15. Locality unknown. --BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 390 (diagnosis in key). --TAANING, Vidensk. Medd. Dansk/ Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 54 (North Atlantic; diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 63 (note). --NORMAN, Discovery Rep., vol. 2, 1930, p. 325 (type; type of Dasyscopelus naufragus).

Myctophum (Myctophum) asperum BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 197, text fig. 115 (STEINDACHNER'S specimen).

Scopelus asper VALENCIENNES, Hist. Nat. Poiss., vol. 22, 1849, p. 454 (New Ireland). --GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 411 (type; Gulf of Guinea).

Scopelus (Dasyscopelus) asper STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, Math.-Nat. Kl., vol. 55, pt. 1, 1867, p. 589 (China Sea).

Dasyscopelus asper GOODE and BEAN, Oceanic Ichth., 1895, p. 92, pl. 28, fig. 106 (copied). — GILBERT, Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 221 (N. Lat. 3°28' W. Long. 136°54', about 700 miles north of Marquesas Islands); Mem. Carnegie Mus., vol. 6, No. 2, 1913, p. 73 (N. Lat. 30° to 37° E. Long. 129° to 142°, in 0 to 300 fathoms, off Japan). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 67 (part; not Hawaii material). — BORODIN, Bull. Vanderbilt Oceanogr. Mus., vol. 1, art. 1, 1928, p. 11 (Caribbean Sea).

Dasyscopelus naufragus WAITE, Records Australian Mus., vol. 5, pt. 3, 1904, p. 154, pl. 18, fig. 3. Lord Howe Island.

Depth 4 1/2 to 5; head 3 1/2 to 3 4/5, width 2. Snout 5 3/4 to 6 1/2 in head; eye 2 3/5 to 2 4/5, greater than snout or interorbital; maxillary extends little behind eye but not to hind preopercle edge, expansion 3 1/5 in eye, length 1 3/5 to 1 2/3 in head; interorbital 2 4/5 to 3, nearly level. Gill rakers 5 + 10, lanceolate, rather robust, 2 1/5 in eye; gill filaments 3/5 of gill rakers.

Scales 36 or 37 in lateral line to caudal base, scales enlarged; 2 above, 3 below, 14 predorsal. Fins all more or less scaly. Scales with 4 basal radiating striae; 10 to 24 apical marginal denticles; circuli rather coarse, obsolete apically.

Two small antorbitals close along front eye edge, one superior and other low; 2 operculars, upper much larger, in line with lower eye edge and lower or front subpectoral; 5 pectorals, equidistant; 1 suprapectoral, above and before pectoral fin origin and little nearer lateral line; 2 subpectorals, first or lower on slightly inclined line with suprapectoral and second pectoral, upper close before lowest pectoral fin ray bases; 4 ventrals, equidistant; 1 supraventral, midway to little below in space between lateral line and ventral fin base; 7 or 8 + 6 anals, first 2 posteroanals over last anal fin ray bases; 3 supraanals, first or lowest little behind third ventral, second would form obtuse angle with first and third or uppermost little behind last ventral, uppermost close below lateral line opposite anal fin origin; 1 posterolateral above and little behind last anteroanal; 2 close set precaudals, low, posterior little higher. Male with supracaudal luminous scale.

D. III, 9, I, first branched ray 1 3/5 to 1 2/3 in head; adipose fin 2 1/5 to 4 2/3; A. III, 14, I or III, 15, I, first branched ray 1 4/5 to 2; caudal subequal to little longer than head; least depth of caudal peduncle 3 1/3 to 4; pectoral 1 to 1 1/8; ventral 1 4/5 to 1 7/8.

Brown, scale pockets darker. Sides and lower surfaces silvery white with metallic or iridescent reflections. Iris white. Fins all whitish.

Atlantic and Pacific Oceans.

D. 5185. Lusaran Light, N. 23° E., 25.50 miles (N. 10°05'45" E. 122° 18'30"), between Panay and Negros. In 638 fathoms. March 30, 1908. Length 19 mm.

D. 5422. Lusaran Point Light, S. 80° E. 9.7 miles (N. 10°31' E. 122° 18'45"), between Panay and Guimeras. March 30, 1909. Length 16 to 24 mm. 8 examples.

D. 5616. Tifore Island (C.) N. 62° W., 50 miles (N. 0°36'00" E. 126° 55'20"), Molucca Passage. November 22, 1909. Length 36 mm.

74674 U. S. N. M. Albatross Collection 4973. Length 82 mm.

74765 U. S. N. M. Albatross Collection 4909. Length 23 mm.

74676 U. S. N. M. Albatross Collection 4921. Length 25 mm.

74677 U. S. N. M. Albatross Collection 4910. Length 25 to 52 mm.

74678 U. S. N. M. Albatross Collection 5052. Length 31 to 45 mm.

75773 U. S. N. M. N. 3°28' W. 136°54'. Albatross Collection. Length 18 mm.

Myctophum spinosum (Steindachner)

Scopelus spinosus STEINDACHNER, Sitz Akad. Wiss. Wien, Math.-Nat. Kl., vol. 55, 1867, p. 711, pl. 3, figs. 4-a. China. --LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift., Kjöbenhavn, ser. 6, vol. 7, No. 6, 1892, p. 239, pl. 1, figs. 1-2 (N. 14°11' W. 29°32'; N. 9° W. 22°; N. 6°22' W. 22°; N. 5°31' W. 23°15'; N. 4° W. 24°; N. 3°10' W. 20°30'; N. 3°10' W. 27°50'; N. 3°9' W. 23°11'; S. 0°4' W. 25°; S. 2°30' W. 16°4'; S. 2° W. 31°30'; S. 7°6' W. 11°30'; S. 16°8' E. 111°50'; S. 13° E.103°20').

Dasycopelus spinosus GOODE and BEAN, Oceanic Ichth., 1895, p. 92 (compiled). --JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 575 (compiled). --GILBERT, Bull. Bur. Fisher., vol. 23, pt. 2, 1903 (1905), p. 599 (south of Lanai; west of Oahu; west of Niihau; near Laysan; south of Oahu); Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 220 (N. 13°32' W. 135°40'; N. 3°28' W. 136°54'; S. 15°24'30" W. 147°59'40"; S. 16°39' W. 149°11'); Bull. Amer. Mus. Nat. Hist. New York, vol. 30, art. 2, March 10, 1911, p. 15 (S. 1° W. 118°); Mem. Carnegie Mus., vol. 6, No. 2, 1913, p. 73 (south of Kagoshima). --JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, Dec. 1922, p. 11(reference). FOWLER and BALL, Bull. Bishop Mus., No. 26, 1925, p. 7 (Wake Island). -- FOWLER, Mem. Bishop Mus., vol. 10,1928,p.67(Wake Island material;Hawaii).

Myctophum spinosum BRAUER, Zool. Anzeiger, vol. 28, No. 10, Dec. 20, 1904, p. 389 (diagnosis in key). --WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 87 (Celebes Sea). --WEBER and BEAUFORT, Fishes Indo Austral-Archipelago, vol. 2, 1913, p. 163 (Celebes material). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 63 (copied). --NORMAN, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 514 (Zanzibar).

Myctophum (Myctophum) spinosum BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 196, text figs. 113-114 (north of New Zealand).

Scopelus asper (not RICHARDSON) GUNTHER, Fishes of Zanzibar, 1866, p. 116 (east coast of Africa).

?Myctophum selenops TAANING, Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 54. North Atlantic; diagnosis in key.

Depth 4 to 4 1/4; head 4 to 4 1/2, width 1 3/4 to 1 7/8. Snout 6 to 6 1/2 in head from snout tip; eye 2 2/3 to 2 4/5, greater snout or slightly greater than interorbital; maxillary reaches slightly behind eye though not quite to hind vertical preopercle edge, expansion 3 to 3 1/2 in eye, length 1 1/2 to 1 4/5 in head from snout tip; interorbital 3 4/5 to 4, low. Gill rakers 8 + 16 or 17, lanceolate, 1 3/4 in eye, or twice gill filaments.

Scales 36 or 37 in lateral line, little smaller than adjacent scales; 3 above, 3 below, 13 predorsal to occiput. Vertical fins and pectorals all more or less covered with small scales. Ventral with rounder or only very short axillary scale. Scales ctenoid, very firmly adherent. Scales with 5 basal radiating striae; apical denticles 14 or 15 along free edge; circuli moderate, obsolete apically.

A small upper antorbital photophore, also small lower one, both on front eye edge; 2 operculars, upper larger and on inclined line from lower eye edge and lower subpectoral; 3 equidistant veiled branchiostegals; 5 pectorals, equidistant or last 3 closer together; 1 suprapectoral, close above and before pectoral fin origin, or midway between latter and lateral line; 2 subpectorals, lowest pectoral rays; lower opposite suprapectoral and second pectoral, upper close before 4 ventrals, equidistant; 1 supraventral, midway between lateral line and first ventral photophore; 6 to 8 + 5 to 8 anals, all but first two posteroanals behind anal fin base; 3 supraanals, in inclined line from second ventral to uppermost supraanal, first before fourth ventral or over third ventral, second little higher and over fourth ventral, third close below lateral line opposite anal fin origin or first anteroanal; 2 precaudals, close together and posterior slightly higher. Male with 7 supracaudal luminous scales, female with 3 infracaudal.

D. IV, 9, I or IV, 10 I, first branched ray 1 1/4 to 1 2/5 in total head length; adipose fin 2 1/3 to 3 1/10; A. III, 16, I to III, 18, I, first branched ray 1 2/3 to 2 1/10; caudal 1 1/5 to 1 1/4, small, well forked; least depth of caudal peduncle 3 1/10 to 3 1/2; pectoral 1 1/10 to 1 1/4; ventral 2 to 2 1/2.

Dark neutral brown to blue or violet above, sides and below silvery white with iridescent reflections. Iris silvery white. Fins pale to whitish.

Pacific and Indian Oceans. Taaning separates the Atlantic form as Myctophum selenops, "Characterized by the deep, short form," depth of body only 3 1/2 times in total length without caudal fin. AO 7+3. D. 13-14. A. 18-19."

D. 5530. Balicasag Island (C.) N. 32° E., 4.3 miles (N. 9°26'45" E. 123°38'30"), between Siquijor and Bohol Islands. August 11, 1909. Length 42 mm.

D. 5531. Balicasag Island (C.), N. 43° E., 4.2 miles (N. 9°27'30" E. 123°38'). August 11, 1909. Length 22 to 43 mm. 2 examples.

D. 5604. Bilatu (town), N. 26° W., 8.7 miles (N. 0°22'30" E. 122°42'30"), Gulf of Tomini, Celebes. November 15, 1909. Length 50 mm.

D. 5196. Capitancillo Light, N. 5°30' W., 14.30 miles (N. 10°44'30" E. 124°7'30"), off northern Cebu Island. April 3, 1908. Length 21 to 39 mm. 4 examples.

D. 5672. Dongala Light, S. 80° E. 54 miles (S. 0°29' E. 118°51"), Macassar Strait. December 30, 1909. Length 18 to 31 mm. 16 examples.

D. 5176. Escarceo Light, S. 57° E., 7 miles (N. 13°35'15" E. 120°53'20"), Verde Island Passage. In 260 fathoms. March 24, 1908. Length 43 mm?

D. 5185. Lusaran Light, N. 23° E., 25.50 miles (N. 10°5'45" E. 122°18'30"), between Panay and Negros. In 638 fathoms. March 30, 1908. Length 19 to 30 mm. 2 examples.

D. 5223. Malabrigo Light, W. 9.80 miles (N. 13°36' E. 121°25'30"), between Marinduque and Luzon. April 24, 1908. Length 57 mm.

D. 5669. Mamuju Island (E.), S. 14° E., 18.5 miles (S. 2°19'30" E. 118°50'), Macassar Strait. December 29, 1909. Length 22 to 55 mm. 2 examples.

D. 5125. Nogas Island (W.), S. 11° E., 24 miles (N. 10°48' E. 121°48'30"), Sulu Sea, vicinity of southern Panay. In 411 fathoms. February 3, 1908. Length 16 to 19 mm. 3 examples.

D. 5128. Nogas Island (W.), N. 6° E., 32.50 miles (N. 9°52'10" E. 121°49'35"). February 4, 1908. Length 31 to 36 mm. 2 examples.

51566 U. S. N. M. Albatross Collection (3930). Length 33 mm.

51567 U. S. N. M. Albatross Collection (4009). Length 23 mm.

51568 U. S. N. M. Albatross Collection (3980). Length 22 to 23 mm. 3 examples.

51569 U. S. N. M. Albatross Collection (3926). Length 23 to 32 mm. 5 examples.

51570 U. S. N. M. Albatross Collection (4145). Length 20 to 29 mm. 19 examples.

51571 U. S. N. M. Albatross Collection (3878). Length 24 to 50 mm. 2 examples.

74673 U. S. N. M. Albatross Collection (4921). Length 15 to 29 mm. 3 examples.

75770 U. S. N. M. N. 3°28' W. 136°54' Albatross Collection ( ). Length 19 to 20 mm. 4 examples.

75771 U. S. N. M. S. 15°24'30" W. 147°59'40" Albatross Collection ( ). Length to 19 mm. 5 examples.

75772 U. S. N. M. N.17°32' W. 135°40' Albatross Collection ( ). Length 17 to 18 mm. 2 examples.

Myctophum californiense Eigenmann and Eigenmann

Myctophum californiense EIGENMANN and EIGENMANN, Notes San Diego Biol. Lab., No. 9, 1889, p. (1). Cortez Banks, off San Diego, California. -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 572 (compiled). --GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, 1913, p. 78 (N. 43°5'30" E. 145°57'40", south of Holskaido; Sagami Bay). -- TOWNSEND and NICHOLS, Bull. Amer. Mus. Nat. Hist. New York, vol. 52, art. 1, May 16, 1925, p. 10 (south west of Santa Barbara Islands, Lat. 34° in 534 fathoms). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 64 (compiled); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 10, fig. 4 (type).

Myctophum humboldti (not RISSO) BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 192 (part).

Depth 4 3/5 to 4 9/10; head 3 3/5 to 3 3/4, width 1 4/5 to 2 3/5. Snout 5 to 6 4/5 in head from snout tip; eye 3 1/8 to 3 2/5, greater than snout, subequal with interorbital; maxillary reaches back well beyond eye though not quite opposite little inclined hind preopercle edge, expansion 3 1/4 in eye, length 1 1/2 in head from snout tip; interorbital 3 1/8 to 3 3/5, convex. Gill rakers 6 to 8 + 14 to 17, lanceolate, slender, subequal with gill filaments or 1 1/3 to 1 2/5 in eye.

Scales 41 or 42 in lateral line to caudal base, enlarged, tubes distinct; 3 above, 3 below, 13 predorsal to occiput. Pectoral with pointed axillary scale 1/6 of fin. Very small pointed scale in ventral axil. Caudal base scaly. Scales very caducous, mostly fallen. Scales with 6 basal radiating striae; circuli moderate, more or less obsolete apically.

Small upper antorbital photophore and little larger lower; 2 operculars, upper larger and little below line from lower eye edge and lower or first subpectoral, very small lower opercular close behind end of maxillary; 3 veiled equidistant branchiostegals; 5 pectorals, first interspace longest and third shortest; 1 suprapectoral, little below middle between lateral line and pectoral fin origin; 2 subpectorals, first or lower over second pectoral and nearer upper subpectoral than first pectoral, also slightly before suprapectoral; 5 ventrals, third well elevated or level with first or lower supraanal, over and little behind second ventral; 1 supraventral, over and little behind last pectoral or slightly nearer ventral fin origin than lateral line; 7 or 8 + 8 to 10 anals, last 5 posteroanals behind ventral fin base; 2 supraanals, first or lower over last ventral and upper little posterior above and close below lateral line; 1 posterolateral, close below lateral line over and little behind last anteroanal; 2 precaudals, low, posterior little higher. Supracaudal luminous scales 5 to 7.

D. IV, 10, I, first branched ray 1 1/3 to 1 1/2? in total head length; adipose fin 2 2/3 to 3 4/5; A. III, 18, I or III, 19, I, first branched ray 1 3/5; caudal 1 1/8 to 1 1/5?, well forked; least depth of caudal peduncle 3 to 3 4/5; pectoral 1 1/8? to 1 1/3; ventral 1 2/3 to 1 3/4?

Brown, scale pockets dusky. Iris grayish, with pale or whitish luminous bodies. Fins more or less whitish.

Pacific Ocean.

41920 U. S. N. M. Cortez Banks, off San Diego, California. Dr. C. H. Eigenmann. Length 84 mm. Type.

74658 U. S. N. M. Albatross Collection 3034. In 127 fathoms. October 1, 1906. Length 117 mm.

Myctophum humboldti (Risso)

Serpe humboldti RISSO, Ichth. Nice, 1810, p. 358, pl. 10, fig. 38

Nice.

Scopelus humbol RISSO, Mem. Accad. Sci. Torino, vol. 25, 1820,

p. 266, pl. 10, fig. 1. (Nice).

Scopelus humboldti RISSO, Hist. Nat. Eur. Mérid., vol. 3, 1826,

p. 467 (Nice). --GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864,

p. 407 (Atlantic). --STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien,

Math.-Nat. . Kl., , vol. 57, 1868, p. 732 (Canary Islands). --

VINCIGUERRA, Ann. Mus. Civ. Stor. Nat., Genoa, vol. 22, 1885,

p. 461 (Genoa). --LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift.

Kjöbenhavn, ser. 6, vol. 7, 1892, p. 254, fig. 12 (Cocos Island,

New Amsterdam, Zanzibar, China Sea). --COLLETT, Res. Camp. Monaco,

vol. 10, 1896, p. 110 (Cape Finisterre). --HOLT AND BYRNE, Dep.

Agric. Techn. Instruct. Ireland, Sci. Investig. 1910, No. 6 (1911),

p. 12, fig. 2 (outline) (Irish Atlantic Slope, 602 to 630 fathoms).

Scopelus humboldtius VALENCIENNES, Règne Animal Cuvier, Illustr. Poiss., 1839, pl. 103 (name on explanation to plate).

Scopelus humboldti VALENCIENNES, Règne Animal Cuvier, Illustr. Poiss., 1839, pl. 103, fig. 2. --VINCIGUERRA, Atti Soc. Ital. Sci. Nat., vol. 34, 1892, p. 329 (Canaries).

Myctophum humboldtii GOODE and BEAN, Oceanic Incth., 1895, p. 73, pl. 22, fig. 82 (Atlantic materials).

Myctophum (Myctophum) humboldti BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 192, text figs. 108-111 (Canaries; between Cocos Island and Sumatra; between Maldives and Chagos Islands; between Chagos Islands and Seychelles; between Seychelles and Zanaibar). --MURRAY and HJORT, The Depths of the Ocean, 1912, p. 613 (off Morocco; south west of Azores). --BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 243, pl. 9, fig. 7 (off Cape Point and East London, to 470 fathoms).

Myctophum humboldti BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 389 (diagnosis in key). --GILBERT, Bull. Mus. Comp. Zool., vol. 46, No. 14, April 1906, p. 260 (voyage from China); Bull. Amer. Mus. Nat. Hist. New York, vol. 30, art. 2, March 10, 1911, p. 14 (off Chile). --WAITE, Records Canterbury Mus., vol. 1, pt. 3, 1911, p. 166, pl. 27, fig. 3 ( ). --TAANING, Rep. Danish Oceanogr. Exp. Mediterranean, No. 5, 1918, p. 63, figs. 21-22 (Mediterranean, Messina, Atlantic); Vidensk. Medd. Dansk Naturh. Foren. Köbenhaven, vol. 86, 1928, p. 54 (diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 64 (compiled). --NORMAN, Discovery Rep., vol. 2, 1930, p. 325 (S. 43°20' W. 46°02', 2000 meters; S. 33°53'45" E. 9°26'30", 1000 meters; S. 33°20' to 33°46' E. 15°18' to 15°08', 625 to 675 meters).

Scopelus boops VALENCIENNES, Hist. Nat. Poiss., vol. 22, 1849, p. 451 (compiled). --GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 408 (type; Vancouver Island). --MACLEAY, Proc. Linn. Soc. New South Wales, vol. 6, 1881, p. 223 (compiled).

Scopelus veranyi MOREAU, Bull. Soc. Philomath., Paris, ser. 7, vol. 12, 1888, p. 108. Nice. --CARUS, Prodr. Faun. Medit., vol. 2, 1893, p. 563 (compiled).

Stylophthalmus mediterraneus MAZZARELLI, Revist. Mens. Pesca, Pavia, vol. 5, 1910, p.

Depth 4 1/4 to 5; head 3 1/2 to 3 2/3, width 2 1/8 to 2 1/5. Snout 5 to 5 2/3 in head; eye 3 1/10 to 3 1/5, greater than snout, greater than interorbital to subequal with age; maxillary reaches well beyond eye though not to little inclined hind preopercle edge, expansion 3 1/5 to 3 1/2 in eye, length 1 1/2 to 1 3/5 in head; interorbital 3 1/4 to 3 2/5, low, very slightly and broadly convex. Gill rakers 5 + 13 to 15, lanceolate, 1 1/2 in eye, equal gill filaments.

Scales 38 to 40 in lateral line; 3 above, 3 or 4 below, 13 or 14 predorsal to occiput. Apparently no enlarged axillary ventral scale. Caudal base scaly. Scales with 4 or 5 basal radiating striae and 5 or 6 short weak apical marginals; circuli very fine, obsolete apically.

Two small antorbital photophores, upper above level of upper pupil edge, lower larger and below level of lower pupil edge; 2 opercular, upper larger and nearly level with lower eye edge and upper subpectoral; 3 equidistant veiled branchiostegals; 5 pectorals, last before ventral fin origin, third interspace shortest; 1 suprapectoral, little before pectoral fin origin and midway to lower third in space between pectoral fin origin and lateral line; 2 subpectorals, first or lower well forward opposite to little anterior from second pectoral photophore, upper close before lowest pectoral rays; 4 equidistant ventrals; 1 supraventral, little nearer to midway between last pectoral spot and lateral line; 8 + 7 or 8, most posteroanals behind anal fin base; 3 supraanals, first and second nearly on same slightly inclined line with supraventral, first over second ventral spot, second over fourth ventral spot or even behind third ventral spot, uppermost still little posterior close below lateral line; 1 postero-lateral, over or little before last anteroanal spot and close below lateral line; 2 precaudals, close, posterior little elevated. Supracaudal luminous scales 1 or 2, close before caudal, or 2 supracaudal and 2 infracaudal.

D. IV, 10, first branched ray 1 1/2 in head; adipose fin 3 to 3 1/8; A. III, 17, I to III, 20, first branched ray 2 to 2 4/5?; caudal 1 1/2?, well forked; least depth of caudal peduncle 2 1/3 to 3 2/5; pectoral 1 2/5 to 1 2/3; ventral 1 3/4 to 2.

Brown, skin pockets all darker or dusky. Scales silvery or with iridescent tints. Caudal base dusky. Inside mouth dusky. Fins all pale brown.

Atlantic, Pacific and Indian Oceans. The anal photophores vary 7 to 9 + 4 to 9. Taaning gives the vertebrae 37 to 40.

40066 U. S. N. M. Nice. Florence Museum. Length 140 mm.

43772 U. S. N. M. N. 36°35' W. 74°03'. Bureau of Fisheries. Length 83 mm.

49380 U. S. N. M. Nice. M. Bellotti. Length 108 mm.

Myctophum evermanni Gilbert

Myctophum evermanni GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 597, pl. 70, fig. 2. South of Oahu; off Lanai; Niihau; Laysan; Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 218 (N. Lat. 5° - 17° W. Long. 135° - 137°; S. Lat. 16°19' W. Long. 148°11'; Marquesas Islands); Mem. Carnegie Mus., vol. 6, No. 2, 1913, p. 80 (off southern Japan). --WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 87 (Halmaheira Sea, Manipa Strait, Banda Sea, to 1000 meters). --WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 162, fig. 63 (tail) (Weber's materials). -- JORDAN and JORDAN, Mem. Carnegie Mus. vol. 10, No. 1, Dec. 1922, p. 11 (reference). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 65 (compiled). --FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 70 (Hawaiian Islands). --PARR, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 10 (type). --NORMAN, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 514 (between Admiralty Island and Papua).

Myctophum caninianum (not VALENCIENNES) GÜNTHER, Rep. Voy. Challenger, vol. 31, pt. 2, 1889, p. 30 (neighborhood of New Guinea; passage to Admiralty Islands).

Depth 4 1/2 to 5 1/8; head 3 1/8 to 3 1/3, width 2 1/2 to 2 3/5. Snout 4 2/3 to 5 3/5 in head; eye 3 1/3 to 3 1/2, greater than snout or interorbital; maxillary reaches well beyond eye, not quite to well inclined hind preopercle edge, expansion 2 1/4 to 2 1/3 in eye, length 1 2/5 in head; interorbital 3 1/4 to 3 2/3, low or but slightly convex. Gill rakers 8 + 14, lanceolate, 1 2/3 in eye, equal gill filaments.

Scales 38 or 39 in lateral line, scarcely enlarged; 4 above, 5 below. Caudal base scaly. Scales with 5 basal radiating striae; circuli coarse, obsolete apically.

One antorbital photophore level with lower pupil edge; 2 opercularз, close behind preopercle edge, upper much larger, lower veiled; 3 large veiled equidistant branchiostegals; 5 pectorals, third and fourth closest; 1 suprapectoral, midway between but advanced from pectoral origin and lateral line; 2 subpectorals, first or lower nearer second pectoral photophore from which little advanced, also before suprapectoral; upper subpectoral close before lowest pectoral rays; 4 ventrals, equidistant; 1 supraventral, nearly level with pectoral fin origin; 7 to 9 + 4 to 6 anals, of posteroanals first close behind last anal ray base; 3 supraanals, first and second at same level and also level with upper subpectoral, first also little behind second ventral and second little behind fourth ventral and third close below lateral line opposite anal origin; 1 posterolateral, above and posteriorly from last anteroanal close below lateral line; 2 close set precaudals close to lower edge of tail or only hind one little higher.

D. IV, 10, I, first branched ray 1 1/4 to 1 2/3 in head; adipose fin 2 3/4 to 3; A. III, 16, I, first branched ray 1 3/5 to 2 1/3; caudal 1 1/3?, well forked; least depth of caudal peduncle 4; pectoral 3, not reaching supraventral photophore or half of depressed ventral fin; ventral 1 3/5 to 2 in head, not quite or reaching anal.

Color brownish where scales have fallen. Head and scales with silvery sheen. Fins whitish, bases of caudal lobes black.

East Indies, Japan, Polynesia. The anal photophores are quite characteristic, in combination with other features, as the posteroanals begin behind the base of the last anal ray.

D. 5604. Bilatu (town), N. 26° W., 8.7 miles (N. 0°22'30" E. 122°42'30"), Gulf of Tomini, Celebes. November 15, 1909. Length 21 to 35 mm. 53 examples.

D. 5196. Capitancillo Light, N. 5°30' W., 14.30 miles (N. 10°44'30" E. 124°07'30"), off northern Cebu. April 3, 1908. Length 24 to 28 mm. 22 examples.

D. 5672. Dongala Light, S. 80° E., 54 miles (S. 0°29'00" E. 118°51'00"), Macassar Strait. December 29, 1909. Length 20 to 33 mm. 12 examples.

D. 5176. Escarceo Light, S. 57° E., 7 miles (N. 13°35'15 E. 120°53'20"), Verde Island Passage. In 260 fathoms. March 24, 1908. Length 20 to 22 mm. 17 examples. Very poor.

D. 5258. Juraojurao Island (S.), S. 75° W., 16.25 miles (N. 10°27'45" E. 122°12'30"), off Southern Panay. June 2, 1908. Length 23 to 45 mm. 8 examples.

D. 5669. Mamuju Island (W.), S. 14° E., 18.5 miles (S. 2°19'30" E. 118°50'00"), Macassar Strait. December 29, 1909. Length 25 mm.

D. 5128. Nogas Island (W.), N. 6° E., 32.50 miles (N. 9°52'10" E. 121°49'35"), Sulu Sea, vicinity southern Panay. February 4, 1908. Length 20 to 29 mm. 9 examples.

51521 U. S. N. M. Albatross Collection 3980. Length 27 mm. Type.

51522 U. S. N. M. Albatross Collection 3980. Length 23 to 25 mm. 2 examples.

51523 U. S. N. M. Albatross Collection 3926. Length 24 to 27 mm. 4 examples.

74657 U. S. N. M. Albatross Collection 4921. Length 16 to 25 mm. 12 examples.

75780 U. S. N. M. N. 5°40' W. 136°47' Albatross Collection . Length 25 mm. 2 examples.

75781 U. S. N. M. N. 10°57'35" W. 137°35'25" Albatross Collection . Length 24 mm.

75782 U. S. N. M. N. 17°32' W. 135°40' Albatross Collection . Length 19 to 22 mm. 5 examples.

75783 U. S. N. M. N. 8°00' W. 79°33' Albatross Collection 4625. Length 37 mm.

75784 U. S. N. M. S. 0°40' W. 88°11' Albatross Collection 4640. Length 28 to 38 mm. 11 examples.

75785 U. S. N. M. S. 2°13' W. 89°42' Albatross Collection 4644. Length 23 to 27 mm. 3 examples.

75786 U. S. N. M. S. 4°02' W. 89°16' Albatross Collection 4646. Length 23 mm.

75787 U. S. N. M. S. 11°30' W. 87°19' Albatross Collection 4664. Length 35 to 36 mm. 3 examples.

75788 U. S. N. M. S. 16°55' W. 100°25' Albatross Collection 4704. Length 33 mm.

75789 U. S. N. M. S. 9°30' W. 95°08' Albatross Collection 4710. Length 25 to 32 mm. 5 examples, all in poor condition.

75790 U. S. N. M. S. 5°11' W. 98°56' Albatross Collection 4717. Length 22 mm.

75791 U. S. N. M. S. 5°32'30" W. 99°32' Albatross Collection 4718. Length 61 mm.

Myctophum rufinum Taaning

Myctophum rufinum TAANING, Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 54. North Atlantic. --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 65 (compiled).

Snout little protruded over lower jaw.

Scales cycloid.

Pectoral photophores at same level; suprapectoral above pectoral origin; anals in 2 groups, 8 or 9 + 5 to 7; supraanals in right or nearly right angle, first above third ventral or slightly advanced; 1 posterolateral. Supracaudal lateral plates extend from second dorsal to caudal in adult male.

D. 14 or 15; A. 19 to 21, space from anal origin to caudal less than space from eye center to anal and last anal ray in line passing through first and second posteroanals.

(Taaning.)

North Atlantic. Related to Myctophum evermann.

Myctophum aurolaternatum Garman

Myctophum aurolaternatum GARMAN, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 264, pl. 55, fig. 3, N. 6°21' W. 80°41', surface. --BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 389 (diagnosis in key); Deutsch. Tiefsee Exp. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 162 (diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 65 (diagnosis in key).

Depth 4 7/8 to 5; head 3 1/5 to 3 1/4, width 2 1/5 to 2 1/4. Snout 6 1/4 to 7 in head; eye 3 1/4 to 3 1/2, greater than snout or interorbital; maxillary reaches 1/2 to 3/5 eye diameter behind eye though not quite to little inclined hind preopercle edge, slender, length 1 2/3 to 1 3/4 in head; interorbital 3 2/5 to 4, low, slightly convex. Gill rakers 6 + 12, slender, lanceolate, 1 2/5 in eye; gill filaments 3/5 gill rakers.

Scales 37 to 39 in lateral line to caudal base, not enlarged; 3 above, 4 below, 14 predorsal to occiput. Ventral axillary scale 1/4 in fin. Caudal base scaly. Scales with 2 basal radiating striae; circuli fine, complete.

Small antorbital photophore little inferior on front eye edge; 2 operculars, upper much larger and on line from eye passing between subpectorals, lower close behind hind maxillary end; 3 veiled equidistant branchiostegals; 5 pectorals, level except last which little elevated or before ventral fin origin; 1 suprapectoral, little nearer pectoral fin origin than lateral line and slightly behind lower subpectoral; 2 subpectorals, first or lower over second pectoral and upper close before bases of lowest pectoral fin rays; 4 ventrals, level, first interspace longest, third shortest; 1 supravantral, slightly below middle of space between lateral line and ventral fin base; 10 + 6 anals, posteroanals behind anal fin base; 3 supra-anals, in inclosed line, first or lowest little nearer fourth ventral than median, which in turn closer to first than to uppermost, which close below lateral line opposite anal fin origin; 1 posterolateral, above and close before last anteroanal, also close below lateral line; 2 low close set precaudals at lower rudimentary caudal fin rays. Supracaudal luminous scales 6.

D. III, 10, I, first branched ray 1 1/2 to 1 3/4 in head; adipose fin 3 1/4 to 3 2/5; A. III, 15, I, first branched ray 2 to 2 1/8; caudal 1 2/5?, forked; least depth of caudal peduncle 3 1/2 to 3 4/5; pectoral 1 2/3; ventral 2 to 2 1/5.

Brown, scale pockets dusky to blackish. Iris, sides of head and scales silvery, with iridescent tints. Fins all pale to whitish.

Eastern Pacific.

57892 U. S. N. M. Albatross Collection 3382. Length 50 to 72 mm.
3 examples.

75794 U. S. N. M. Albatross Collection 4644. Length 28 to 32 mm.
7 examples.

75795 U. S. N. M. Albatross Collection 4650. Length 32 to 48 mm.
3 examples.

75796 U. S. N. M. Albatross Collection 4652. Length 43 mm.

75797 U. S. N. M.
Length 40 mm.

75798 U. S. N. M. Albatross Collection 4718. Length 40 to 45 mm.
2 examples.

75799 U. S. N. M. Albatross Collection 4714. Length 45 mm.

75800 U. S. N. M. Albatross Collection 4716. Length 31 mm.

Myctophum affine (Lütken)

Scopelus affinis LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, 1892, p. 252, fig. 10. Pacific Ocean, China Sea, east coast of Australia.

Myctophum affine GOODE and BEAN, Oceanic Ichth., 1895, p. 72 (compiled). --JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 4, pt. 1, 1896, p. 570 (compiled). --BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 389 (diagnosis in key). --LÖNNBERG, Swed. Südpolar Exp., Fishes, vol. 5, pt. 6, 1905, p. 63 (S. 32°15' W. 50°14'). --GILBERT, Mem. Carnegie Mus., vol. 26, No. 6, 1908, p. 217 (N. Lat. 1° - 17° W. Long. 135° - 137°; S. Lat. 9° W. Long. 139°45', Marquesas Islands); Bull. Amer. Mus. Nat. Hist., New York, vol. 30, art. 2, March 10, 1911, p, 14 (S. Lat. 1° W. Long. 118°). --FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 570 (N. Lat. 8°37' W. 160°; N. Lat. 5° W. Long. 151°). --GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, 1913, p. 76 (N. Lat. 29° - 33° E. Long. 129° -

142°, off Japan). --WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 87 (Banda Sea, in 1500 meters). --WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 161 (WEBER'S materials). --GILBERT, Proc. U. S. Nat. Mus., vol. 48, 1915, p. 312 (Catalina, California). --JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, 1922, p. 11 (reference). --FOWLER and BALL, Bull. Bishop Mus., vol. 26, 1925, p. 7 (Pearl and Hermes Reef). --TAANING, Vidensk. Medd. Dansk. Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 325 (North Atlantic; diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. (65) 69, text figs. 8-9 (off New Providence, Tongue of the Ocean, Green Cay, Cat Island, San Salvador, Crooked Island, Acklin Island, West Caicos Island, Turks Island). --FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 29 (not fig.13 of young) (Honolulu; Pearl and Hermes Reef; type of Rhinoscopelus oceanicus). --NORMAN, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 514 (Zanzibar; north of Admirality Island; between Admiralty Island and Papua). --PARR, Proc. U. S. Nat. Mus.,

vol. 76, 1929, p. 11 (types of Rhinoscopelus oceanicus and Myctophum margaritatum). --NORMAN, Discovery Rep., vol. 2, 1930, p. 325 (S. 46°36'30" W. 45°7', 5 meters; N. 12°8' W. 20°53'30", 200 to 300 meters).

Myctophum (Myctophum) affine BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 190, text figs. 105 to 107 (photophores) (Cape Verde; Gulf of Guinea, Benguela; west of Chagos Archipelago; east and west of Seychelles). --MURRAY and HJORT, The Depths of the Ocean, 1912, p. 613 (south of Azores, 2865 meters). --PAPPENHEIM, Deutsch. Südpolar Exp., vol. 15, Zool./pt. 2, 1914, p. 193 (N. 15°50' W. 25°23', Cape Verde Islands; S. 5°59' W. 17°39', south west of Sierra Leone).

Scopelus caninianus (not VALENCIENNES) GÜNTHER, Rep. Voy. Challenger, vol. 31, pt. 2, 1889, p. 30 (part; neighborhood of New Guinea; passage to the Admiralty Islands).

Scopelus coccoi (not COCCO) GÜNTHER, Rep. Voy. Challenger, vol. 31, pt. 2, 1889, p. 30 (part; near the Admiralty Islands).

Myctophum opalinum GOODE and BEAN, Oceanic Ichth., 1895, pp. 72, 511, pl. 22, fig. 81, N. 38° to 39° W. 71° to 72°, 542 to 1536 fathoms. --WAITE, Records Australian Mus., vol. 5, pt. 3, 1904, p. 153 (Lord Howe Island). --BREEDER, Bull. Bingham Oceanogr. Collection, vol. 1, art. 1, Oct. 19, 1927, p. 17 (Green Cay and Pt. Francis, Isle of Pines).

Myctophum nitidulum GARMAN, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 266, pl. 56, fig. 3, N. Lat. 27°50' W. Long. 145°45'30".

Rhinoscopelus oceanicus JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 161. N. Lat. 10°57' W. Long. 137°35' (south east of Hawaii).

Myctophum margaritatum GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 596, pl. 68, fig. 2. South of Lanai; west of Oahu; west of Niihau; southwest of French Frigate Shoals; near Laysan Island; south of Oahu; between Honolulu and San Francisco; all at surface.

Depth 4 to 4 1/2; head 3 1/4 to 3 4/5, width 2 to 2 1/5. Snout 5 1/4 to 7 in head from snout tip; eye 2 3/5 to 3, much greater than snout or interorbital; maxillary reaches eye diameters behind eye though not quite to little inclined hind preopercle edge, slender, length 1 1/2 to 1 2/3 in head; interorbital 3 to 3 1/8, concave. Gill rakers 6 + 16, slender, lanceolate, 1 1/2 in eye; gill filaments 3/4 gill rakers.

Scales 37 to 40 in lateral line, little enlarged; 4 above, 4 below, 13 or 14 predorsal. Small scales on caudal base. Scales with 5 or 6 basal radiating striae; circuli very fine, incomplete apically.

One median, minute preocular photophore; 2 operculars, upper little larger; 3 veiled equidistant branchiostegals; 5 pectorals, usually third and fourth little closer than others; 1 suprapectoral, much nearer pectoral fin origin than lateral line, over or slightly posterior to lower subpectoral; 2 subpectorals, first or lower opposite second pectoral photophore, upper before lowest pectoral fin ray bases; 4 ventrals, equidistant; 1 supraventral, midway to lower 2/5 between ventral fin axil and lateral line; 8 to 10 + 5 to 7 anals, most or all posteroanals behind anal fin base; 3 supraanals in inclined line with last ventral photophore and uppermost at or close below lateral line; 1 posterolateral close below lateral line, little before or little behind last posteroanal; 2 low close set precaudals. Supracaudal luminous scales 5 or 6.

D. III, 9, I or III, 10, I, first branched ray 1 1/2 to 1 3/4? in head; adipose fin 3 to 4; A. III, 16, I or III, 17, I, first branched ray 2? to 2 2/5; caudal damaged, less than head; least depth of caudal peduncle 3 1/8 to 4 1/8; pectoral 1 2/3 to 1 3/4; ventral 2 1/8 to 2 2/5.

Dusky brown above, grayish where scales have fallen or with dark dots. Sides of head and body silvery, usually dotted with dusky. Scales with iridescent tints. Iris silvery white. Opercle silvery. Fins dull brownish, caudal base dark.

Indian, Pacific and Atlantic Oceans. Brauer gives the anal photophores as 7 + 4 to 7, 8 + 3 to 7 and 9 + 4 to 10 and 10 + 6.

D. 5530. Balicasag Island (C.), N. 32° E., 4.3 miles (N. 9°26'45" E. 123°38'30"), between Siquijor and Bohol Islands. August 11, 1909. Length 18 to 20 mm. 4 examples.

D. 5531. Balicasag Island (C.), N. 43° E., 4.2 miles (N. 9°27'30" E. 123°38'00"). August 11, 1909. Length 23 mm.

D. 5611. Buka Buka Island (E.) S. 43° W., 6.4 miles (S. 0°40'30" E. 121°50'00"), Gulf of Tomini, Celebes. November 19, 1909. Length 25 mm.

D. 5195. Capitancillo Island Light, N. 11.75 miles (N. 10°47' E. 124°06'30"), off northern Cebu Island. April 3, 1908. Length 22 mm.

D. 5176. Escarceo Light, S. 57° E., 7 miles (N. 13°35'15" E. 120°53'20"), Verde Island Passage. In 260 fathoms. March 24, 1908. Length 18 or 19 mm. 2 examples.

D. 5177. Escarceo Light, S. 53° E., 5.80 miles (N. 13°35' E. 120°54'36"). In 260 fathoms. March 24, 1908. Length 30 mm.

D. 5258. Juraojurao Island (S.), S. 75° W., 16.25 miles (N. 10°27'45" E. 122°12'30"), off southern Panay. June 2, 1908. Length 18 to 35 mm. 11 examples.

D. 5653. Lamulu, S. 40" E., 18 miles (S. 4°27'36" E. 121°16'36"), Gulf of Boni, Celebes. December 17, 1909. Length 20 to 25 mm. 2 examples.

D. 5232. Limasaua Island (S.), S. 69° E., 20.60 miles (N. 10°00'45" E. 124°44'06"), between Bohol and Leyte. May 7, 1908. Length 19 mm.

D. 5185. Lusaran Light, N. 23° E., 25.50 miles (N. 10°05'45" E. 122°18'30"), between Panay and Negros. In 638 fathoms. March 30, 1908. Length 15 mm. 2 examples.

D. 5186. Lusaran Light, N. 20° E., 37.80 miles (N. 9°53'30" E. 122°15'30"). March 30, 1908. Length 28 to 35 mm. 6 examples.

D. 5223. Malabrigo Light, W., 9.80 miles (N. 13°36' E. 121°25'30"), between Marinduque and Luzon. April 24, 1908. Length 15 to 19 mm. 7 examples.

D. 5128. Nogas Island (W.), N. 6° E., 32.50 miles (N. 9°52'10" E. 121°49'35"), Sulu Sea vicinity southern Panay. February 4, 1908. Length 16 to 22 mm. 4 examples.

D. 5227. Point Origon, S. 44° E., 18.30 miles (N. 12°53'45" E. 121°52'30"), east of Mindoro. In 322 fathoms. May 5, 1908. Length 15 mm.

7246 U. S. N. M. N. 39°51'30" W. 70°17', Gulf Stream. Bureau of Fisheries. Length 30 to 38 mm. 4 examples.

37504 U. S. N. M. Cuba. Prof. F. Poey. Length 49 mm.

39484 U. S. N. M. N. 39° W. 71°, Gulf Stream. Albatross Collection 2583. Length 48 to 55 mm. 2 examples.

43774 U. S. N. M. Gloucester Donation 404. Length 113 mm.

43785 U. S. N. M. N. 41° W. 65°, Gulf Stream. Albatross Collection 2528. Length 43 mm.

43798 U. S. N. M. Albatross Station 2585. Length 35 to 54 mm. 9 examples.

43799 U. S. N. M. N. 36°45' W. 74°28'30", Gulf Stream. Albatross Collection 2731. Length 22 to 51 mm. 30 examples.

43800 U. S. N. M. N. 38° W. 71°. Albatross Collection 2719. Length 26 to 46 mm. 2 examples.

43802 U. S. N. M. N. 38°25' W. 72°40', Gulf Stream. Albatross Collection . Length 46 mm.

43803 U. S. N. M. N. 39°22' W. 71°23'36", Gulf Stream. Albatross Collection. Length 34 mm. Very poorly preserved.

43804 U. S. N. M. N. 39° W. 71°, Gulf Stream. Albatross Collection 2685. Length 33 to 46 mm. 2 examples.

43807 U. S. N. M. Albatross Collection 2727. Length 22 to 40 mm. 21 examples.

43808 U. S. N. M. N. 37° W. 73°. Albatross Collection 2742. Length 36 to 47 mm. 3 examples.